ARTICLE VI.

RESULTS OF OBSERVATION WITH THE ZENITH TELESCOPE OF THE SAYRE OBSERVATORY FROM APRIL 1, 1876, TO DECEMBER 27, 1893.

BY CHARLES L. DOOLITTLE.

Read April 4, 1902.

In presenting for publication the definitive results of the series of Zenith Telescope observations at the Sayre Observatory, mention should be made of the financial assistance rendered by the Trustees of the Gould Fund of the National Academy and by Mr. Robert H. Sayre, the founder of the Observatory. Without this aid the final discussion must have been deferred indefinitely.

Among those who at different times have assisted in the work of computation, I wish particularly to mention Messrs. Henry C. Coffeen, H. J. Woods, Henry B. Evans and Eric Doolittle.

C. L. DOOLITTLE.

In Volume XX, TRANSACTIONS OF THE AMERICAN PHILOSOPHICAL SOCIETY, Article III presents the results of observation with the Zenith Telescope of the Sayre Observatory from January 19, 1894, to August 19, 1895. The brief historical statement there given as to the inception and progress of the investigation does not require repetition.

The present communication consists of three parts, as follows:

I. Investigation of the coordinates of the stars employed in the latitude work at the Sayre Observatory.

II. Results of latitude determination from 1876 to 1891.

III. Results of latitude and aberration from observations extending from October 10, 1892, to December 27, 1893.

I.

The star list is the result of a joint investigation undertaken by Henry B. Evans and myself. Of the 254 stars, 74 are found in the new fundamental catalogue of Newcomb.* The coordinates of the remaining 180 have been deduced from what was practically all material existing at the time of the reduction.

* *Catalogue of Fundamental Stars for 1875 and 1900, reduced to an Absolute System.* Washington, 1898.

In so far as the problem of latitude variation is concerned extremely precise values of the stellar co-ordinates are not required, nor is it important to reduce them to a uniform system. In the present case, however, a preliminary reduction of the observations showed very appreciable changes in the value of the micrometer during the progress of the work. These were probably due to the wearing of the screw as time went on. It is believed that the prejudicial effect of this change has been practically removed by deriving the screw value from the latitude observations, employing intervals sufficiently small to warrant regarding it as constant during the interval.

If the latitude stars could have been selected so that the plus and minus values of the micrometer correction in each group should exactly balance, no harm would follow if small errors of the screw were disregarded. This condition cannot, however, be fully satisfied, at least not for any considerable time, as precession would soon destroy the equilibrium if such existed.

In case this method of treatment is to be free from objection, the Declinations employed must have a high degree of precision. For this reason the matter has received a greater amount of attention than would have been necessary otherwise.

It is hoped, moreover, that the results may prove valuable in lines of investigation other than that which was its immediate object. With this end in view the Right Ascensions have been reduced with the same care and thoroughness as that given to the Declinations. This part of the investigation is the work of Mr. Evans.

The system adopted is that of Auwers, as found in the *Astronomische Nachrichten*, Vol. 134, p. 33. It is not to be understood that this system is considered superior to that of Newcomb; but since Auwers' system has been more commonly employed in this class of investigations, it was thought best to retain it here for the sake of uniformity.

Authorities.

In the list of catalogues employed it is not thought necessary to give more than the names of those which are generally well known. The works themselves should be found in every astronomical library. In case they are not readily accessible, further information regarding them may be obtained from Newcomb's *New Catalogue of Fundamental Stars*, Davis' *Declinations and Proper Motions of Fifty-six Stars*, and Boss' *Declinations of Fixed Stars*.

In case of all catalogues for which Auwers gives systematic corrections, these have been applied. In other cases such corrections have been derived indirectly through the systems of Newcomb or Boss. Where recourse has been had to other methods, mention of the process is found in the accompanying notes. In some of the recent catalogues the uncorrected places have been employed. For the sake of completeness and uniformity,

however, such corrections have been applied in all cases where they were available, although it would seem that any one who has had occasion to examine somewhat closely into this subject, must agree with Newcomb's conclusion that the correction for systematic errors has in recent times been carried too far.

As the Declinations were reduced in advance of the Right Ascensions, a number of catalogues became available for the latter which were not employed for the former. It is also to be observed that the list embraces several catalogues which give one coordinate only. Where the name is followed by the symbol α, the catalogue has been employed only for the Right Ascensions; when followed by the symbol δ, only for the Declinations.

In the explanatory notes s designates the systematic correction in Right Ascension; s' designates the systematic correction in Declination; p designates the weight of the Right Ascension; p' designates the weight of the Declination; t the mean date of observation. The system of weights employed will be spoken of in connection with the method of reduction.

List of Catalogues.

1. BRADLEY. 1755. Neue Reduction der Bradley'schen Beobachtungen aus den Jahren 1750 bis 1762. Von Arthur Auwers. St. Petersburg, 1888.
2. MAYER. 1755. Tobias Mayer's Sternverzeichniss nach den Beobachtungen auf der Göttinger Sternwarte in den Jahren 1756 bis 1760. Neu bearbeitet von Arthur Auwers. Leipzig, 1894.
3. FEDORENKO'S Lalande. 1790. Positions Moyenne pour l'Epoque de 1790,0 des Etoiles Circumpolaire, dont les observations ont été publiées par Jérôme de Lalande dans les Mémoires de l'Académie de Paris de 1789 et 1790. Par Ivan Fedorenko. St. Pétersbourg, 1854. $s = \frac{1}{2}$ (Åbo + Bessel's Bradley); p same as 2; t from Histoire Céleste.
4. LALANDE. 1800. A Catalogue of those Stars in the Histoire Céleste Française of Jérôme de Lalande for which tables of reduction to the epoch 1800 have been published by Prof. Schumacher. Francis Baily, Esq. This catalogue was used for a few stars where other early authorities were wanting or doubtful. For declinations the places were taken directly from Baily's Catalogue. $p' = 0.1$. For right ascensions Von Asten's tables were used. p same as 2; t from Histoire Céleste.
5. BOSSERT (α). 1800. Supplément à l'Histoire Céleste de Lalande. Catalogue de 3950 étoiles ramenées à l'équinoxe de 1800. Par M. J. Bossert. Paris, 1892. p same as 2.
6. D'AGELET. 1800. Reduction of the Observations of Fixed Stars made by Joseph Lepaute d'Agelet at Paris in 1783–1785, with a catalogue of the Corresponding Mean Places referred to the equinox of 1800,0. By B. A. Gould. Washington, 1866.

   $s = 0^s.12$.
   $s' =$ Piazzi $- 1''.42$ 0^h to XII^h.
   $s' =$ Piazzi $+ 1''.22$ XII^h to $XXIV^h$.
   p same as 2.
7. PIAZZI. 1800. Præcipuarum stellarum inerrantium Positiones Mediæ Ineunte Sæculo xix ex observationibus habitas in Specula Panormitana ab anno 1792 ad annum 1813. Panormi, 1814. t from original observations. Right ascensions of stars north of 65° declination not used.
8. GROOMBRIDGE. 1810. A Catalogue of Circumpolar Stars deduced from the observations of Stephen Groombridge at Blackheath Observatory. Edited by George Biddell Airy, Esq. London, 1838.

9. DORPAT (*a*). 1814. F. G. W. Struve. Observationes Astronomicas Institutas in Specula Universitatis Cæsareas Dorpatensis, Vol. I.
10. DORPAT (*a*). 1815. Catalogus I.
11. KOENIGSBERG (*a*). 1815. Bearbeitung von Bessels Beobachtungen am Dollond'schen Mittagsfernrohre in den Jahren 1813–19 Von Dr. Fritz Cohn. Königsberg Beobachtungen, 39 Abtheilung. $s = 0$.
12. WEISSE-BESSEL (δ). 1825. Bessel's Zone observations reduced by Maximillian Weisse. This was used for a few declinations, usually those for which early determiuations were wanting. $p = 0.1$.
13. SCHWERD-OELTZEN (*a*). 1828. The positions were taken from Carrington, No. 43.
14. ÅBO. 1830. DLX, Stellarum Fixarum Positiones Mediæ ineunte anno 1830 ex observationibus Aboæ habitas deduxit. Fredr. Guil. Aug. Argelander. Helsingforsiæ, 1835. *t* from Davis, Ast. Journal, No. 328.
15. PEARSON (δ). 1830. Dr. Pearson's Catalogue of 520 Stars within 6° North and South of the Ecliptic. Memoirs R. A. S., Vol. xv, p. 97. London, 1846. $p' = 0$; 0.1. $s' = 0$.
16. CAMBRIDGE. 1830. Airy's First Cambridge Catalogue. Memoirs R. A. S., Vol. xi. London, 1859.
17. FALLOWS (*a*). 1830. Results of Observations made by the Rev. Fearon Fallows at the Royal Observatory, Cape of Good Hope, in the Years 1829-31. Memoirs R. A. S., Vol. xix, p. 1.
18. POND. 1830. A Catalogue of 1112 Stars from Observations at Greenwich from 1816 to 1833. London, 1833. *t* was obtained from the original observations in Greenwich Yearly Results.
19. STRUVE. 1830. Stellarum Fixarum imprimis duplicium et multiplicium pro epocha 1830. Petropoli, 1852.
20. WROTTESLEY (*a*). 1830. A Catalogue of the Right Ascensions of 1318 Stars. By John Wrottesley, Esq. Memoirs R. A. S., Vol. x.
21. MONTOJO (*a*). 1835. Mean Positions of the Stars contained in "Mr. Baily's Address" as determined at San Fernando. Memoirs R. A. S., Vol. xii, p. 238.
22. MADRAS. 1835. A General Catalogue of the Principal Fixed Stars from Observations made at the Honorable East India Company's Observatory at Madras in the years 1830–43. By Thomas Glanville Taylor. Madras, 1844.
23. RÜMKER. 1836. Mittlere Oerter von 12,000 Fixsternen für den Anfang von 1836, abgeleitet aus den Beobachtungen auf der Hamburger Sternwarte von Carl Rümker. Hamburg, 1852.
24. KÖLLER (*a*). 1838. Extract from a letter from M. Marian Köller, Director of the Observatory at Kremsmünster . . . . accompanying a Catalogue of 208 Stars. Memoirs R. A. S., Vol. xii, p. 373.
25. ARMAGH. 1840. Places of 5345 Stars observed from 1828 to 1854 at the Armagh Observatory. By Rev. T. R. Robinson. Dublin, 1859.
26. SANTINI (δ). 1840. A Catalogue of 1677 Stars included between the Equator and Ten Degrees of North Declination, observed at the Royal Observatory of Padua. By Prof. Giovanni Santini. Memoirs R. A. S., Vol. xii, p. 273. $p' = 0$; 0.1; 0.2.
27. CAPE of Good Hope. 1840. The Cape Catalogue of Stars deduced from observations made at the Royal Observatory, Cape of Good Hope, 1834 to 1840, and reduced to the epoch 1840 under the superintendence of E. J. Stone. Cape Town, 1878.
28. GILLISS (*a*). 1840. Catalogue of Twelve Hundred and Forty-eight Stars observed at Washington between October, 1838, and July, 1842. Washington, 1846.
29. GREENWICH. 1840. Catalogue of 2156 Stars formed from the Observations made from 1836 to 1841 at the Royal Observatory, Greenwich. London, 1849.
30. OELTZEN's Argelander (*a*). 1842. Annalen der K. K. Sternwarte in Wien. Bd. i. Wien, 1851. *s* same as Åbo; *p* same as Rümker; *t* from original zones.
31. GREENWICH. 1845. Catalogue from observations from 1842 to 1847.
32. PARIS. 1845. Catalogue de l'Observatoire de Paris. Étoiles observées aux Instruments Méridiens de 1837 à 1853.
33. POULKOVA (*a*). 1845. Étoiles observées occasionnellement. St. Pétersbourg, 1875.
34. RADCLIFFE. 1845. The Radcliffe Catalogue of 6317 Stars chiefly Circumpolar reduced to the Epoch 1845. Formed from the Observations made at the Radcliffe Observatory under the Superintendence of Manuel John Johnson. Oxford, 1860.

35. OUDEMANS (δ). 1849. Dissertatio Astronomica Inauguralis exhibens Observationes ope Instrumenti Transitarii partabilis institutas. . . . . Lugdini-Batavorum, 1852.

36. CAPE OF GOOD HOPE. 1850. Catalogue of 4710 Stars for the Epoch 1850, from Observations made at the Royal Observatory, Cape of Good Hope, during the Years 1849 to 1852, under the Direction of Sir Thomas Maclear.

37. GILLISS. 1850. A Catalogue of 1963 Stars and of 290 Double Stars observed by the U. S. Naval Astronomers during the Expedition to the Southern Hemisphere. Appendix i to Washington Yearly Observations for 1868.

38. GREENWICH. 1850. Catalogue of 1576 Stars formed from Observations made during Six Years, from 1848 to 1853, at the Royal Observatory, Greenwich.

39. MADRAS. 1850. A Subsidiary Catalogue of 1440 Stars selected from the British Association Catalogue, reduced to Jan. 1, 1850, from Observations made at Madras in the Years 1849–53. Madras, 1854.

40. RÜMKER. 1850. Neue Folge der mittleren Oerter von Fixsternen für den Anfang von 1850, abgeleitet aus den Beobachtungen auf der Hamburger Sternwarte von Carl Rümker. Hamburg, 1852–59.

41. SONNTAG(a). 1850. Mittlere Oerter für 1850 von Vergleichsternen zum Cometen I 1850. Ast. Nach., Bd. xxxiv. p same as 32 ; $s = .050$.

42. WROTTESLEY (a). 1850. A Catalogue of the Right Ascensions of 1009 Stars contained in the Catalogue of the British Association for the Advancement of Science. . . . . By Lord Wrottesley. Memoirs R. A. S., Vol. xxiii.

43. CARRINGTON. 1855. A Catalogue of 3735 Circumpolar Stars observed at Redhill in the years 1854, '55 and '56 and reduced to the Mean Position for 1855. By Richard Christopher Carrington. p same as 13.

44. MADRAS. 1855. A Catalogue of 317 Stars . . . . deduced from Observations at Madras. Memoirs R. A. S., Vol. xxii.

45. MOESTA. 1855. Observaciones Astronómicas hechas en el Observatorio Nacional de Santiago de Chile en los Añas de 1853, 1854 y 1855. Vol. i. Santiago, 1859.

46. MOSCOW. 1855. Catalogue des étoiles observées par M. Drachoussoff. Annales de l'Observatoire de Moscow, Vol. vi. s same as Nautical Almanac ; p same as 53.

47. POULKOVA. 1855. Positions Moyenne déduites des observations faites au cercle méridien 1840–1869 et réduites à l'époque 1855, 0. Observations de Poulkova, Vol. viii. St. Pétersbourg, 1889.

48. CAPE OF GOOD HOPE. 1860. The Cape Catalogue of 1159 Stars, deduced from Observations by Sir Thomas Maclear at the Royal Observatory, Cape of Good Hope, 1856 to 1861. Cape Town, 1893.

49. SANTINI (δ). 1860. Posizioni Medie di 1,425 Stelle, dedotte dal osservazioni fatte dal defunto Prof. Trettenero 1861–65. Venezia, 1870. $p' = 0$; 0.1 ; 0.2.

50. GREENWICH. 1860. Seven Year Catalogue of 2022 Stars deduced from Observations extending from 1854 to 1860 at the Royal Observatory, Greenwich.

51. MOSCOW. 1860. Resultate aus der Zonen-Beobachtungen am Meridian Kreise der Moskauer Sternwarte während der Jahre 1858-69. I Zone 0°–4°. Memoirés de l'Académie Impériale des Sciences de St. Pétersbourg, viii Série : Classe Physico-Mathematique, Vol. I, No. 5. s same as Poulkova, 1855 ; p same as 53.

52. PARIS. 1860. Catalogue de l'Observatoire de Paris. Etoiles observée de 1854 à 1867.

53. RADCLIFFE, 1860. Second Radcliffe Catalogue, containing 2386 Stars deduced from observations extending from 1854 to 1861 . . . . Oxford, 1870.

54. YARNALL. 1860. Catalogue of Stars observed at the United States Naval Observatory during the years 1845 to 1877. Third edition revised. . . . . Washington, 1889.

55. POULKOVA (δ). 1862. Observations faites à l'Instrument des passages établi dans le Premier Vertical. Oom. Observations de Poulkova, Vol. iii, pp. 223–238.

56. GREENWICH. 1864. New Seven Year Catalogue of 2760 Stars, deduced from Observations extending from 1861 to 1867 at the Royal Observatory, Greenwich.

57. BRUSSELS. 1865. Catalogue de 10,792 Étoiles observée à l'Observatoire Royal de Bruxelles de 1857 à 1878 . . . . Par Ernest Quetelet, Bruxelles, 1887.

58. POULKOVA (a). 1865. Ascensions droites Moyenne des étoiles occasionnellement observées pour 1865,0. Observations de Poulkova, Vol. xii.

59. SCHJELLERUP(a). 1865. Stjernefortegnelse indeholdende 10,000 Positioner af Teleskopiske Fixstjerner imellem — 15 og + 15 Gradus Deklination. Kjøbenhavn, 1864. s same as Nautical Almanac interpolated as follows: $s = 1860 + \frac{7}{15}$ (1875–1860); p same as 53.

60. GLASGOW. 1870. Catalogue of 6415 Stars for the Epoch 1870, deduced from Observations made at the Glasgow University Observatory during the Years 1860 to 1881 . . . . By Robert Grant. Glasgow, 1883.

61. MELBOURNE. 1870. First Melbourne General Catalogue of 1227 Stars for the Epoch 1870 deduced from Observations extending from 1863 to 1870, made at the Melbourne Observatory. Melbourne, 1874.

62. GREENWICH. 1872. Nine Year Catalogue of 2263 Stars deduced from Observations extending from 1868 to 1876, made at the Royal Observatory, Greenwich.

63. ASTRONOMISCHE GESELLSCHAFT ZONES. 1875. These include all of this series of catalogues published, together with the places of those stars found in the Leyden, Lund and Dorpat Zones, those of the earlier and later Lund Zones being combined separately. p is taken the same as Paris, '75; $p' = 1.$ throughout the series.

64. ARMAGH. 1875. Second Armagh Catalogue of 3300 Stars for the Epoch 1875, deduced from Observations made at the Armagh Observatory during the Years 1859 to 1883. . . . . Dublin, 1886. p same as 60.

65. BECKER. 1875. Resultate aus Beobachtungen von 521 Bradley'schen Sternen am grossen Berliner Meridiankreise von Dr. E. Becker. Berlin, 1881.

66. CORDOBA. 1875. Catálogo General Argentino. Cordoba, 1886.

67. DUNSINK. 1875. Mean Places of 321 Red Stars deduced from Observations made with the Meridian Circle at Dunsink. . . Dublin, 1882. $s = 0$; p same as Paris, '75.

68. WASHINGTON. 1875. The Second Washington Catalogue of Stars . . . . prepared under the Direction of J. R. Eastman.

s obtained through Newcomb's system.

$s' = -0''.33$	from $\delta =$	0 to $\delta =$	40°
$=$ .00		40°	50°
$=+$ .09		50°	90°

69. GÖTTINGEN. 1875. Mittlere Oerter der in der Zonen — 0° und — 1° der Bonner Durchmusterung enthaltenen Sterne. . . . Göttingen, 1869. s same as for Nautical Almanac as follows: $s = s_{1860} + \frac{s}{15}(s_{1875} - s_{1860})$; p same as Glasgow, '70.

70. HARVARD. 1875. Catalogue of Primary and Secondary Stars observed during the years 1870–1879 with the Meridian Circle of the Harvard College Observatory. Cambridge, 1886.

71. PARIS. 1875. Catalogue de l'Observatoire de Paris. Étoiles observée de 1868 à 1881.

72. POULKOVA. 1875. Catalog von 5634 Sternen für die Epoche 1875.0 aus den Beobachtungen am Pulkowaer Meridiankreise während der Jahre 1874–1880 von H. Romberg. St. Pétersbourg, 1891.

73. STOCKHOLM. 1875. Results of meridian observations found in the first five volumes of the publications of the Stockholm Observatory. p same as Paris, '75.

74. RESPIGHI (δ). 1875. Catalogo delle Declinazione Medie pel 1875.0 di 1463 Stelle comprese fra i paralleli 20° e 64° nord. . . . . Roma, 1880.

75. CAPE OF GOOD HOPE. 1880. Catalogue of 12,441 Stars for the Epoch 1880 from Observations made at the Royal Observatory, Cape of Good Hope, during the Years 1871 to 1879. By Edward J. Stone. London, 1881.

76. GREENWICH. 1880. Ten Year Catalogue of 4059 Stars, deduced from Observations extending from 1877 to 1886 at the Royal Observatory, Greenwich.

77. MELBOURNE. 1880. Second Melbourne General Catalogue of 1211 Stars for the Epoch 1880, deduced from Observations extending from 1871 to 1884, made at the Melbourne Observatory. Melbourne, 1889.

78. RESPIGHI (δ). 1880. Catalogo delle Declinazione Medie pel 1880,0 di 1004 Stelle di 1ª in 6ª grandezza comprese fra 0° e 20° nord, e 64° e 90° nord. . . . . Roma, 1885.

79. MUNICH (a). 1880. Erster Münchener Sternverzeichniss erhaltend die Mittleren Oerter von 33,082 Sternen. München, Neue Annalen, Bd. i. p same as 60.

80. DE BALL (δ). 1880. Declinationen von 200 Sternen innerhalb der Zone + 49° bis 51°, nach Beobachtungen im ersten Vertical am Passagen-instrumente der Herzoglichen Sternwarte zu Gotha. Ast. Nach., Bd. ci, 353.

81. CAPE OF GOOD HOPE. 1885. Catalogue of 1713 Stars for the Equinox 1885,0 from Observations made at the Royal Observatory, Cape of Good Hope, during the Years 1879 to 1885.

82. HARZER. 1885. Resultate aus Beobachtungen am Meridiankreise der Herzoglichen Sternwarte zu Gotha. Ast. Nach., Bd. cxxvii, 170. $s = 0$; $p = \frac{1}{2}$ that of 76.

83. KASAN (δ). 1885. Les Observations faites à l'instrument des passages établi dans le premier vertical. Kasan Observations for 1893.

84. KARLSRUHE. 1885. Lists found in the first four volumes of the publications of the observatory. $s = 0$; p same as Radcliffe, '60.

85. WASHBURN (δ) '84, '85. 1885. Publications of the Washburn Observatory, Vol. iv.

86. SAFFORD (a). 1885. The Williams College Catalogue of North Polar Stars. Williamstown, Mass., 1888.

87. NYRÉN (δ). 1887. Declinationsbestimmungen einiger Helleren Sterne zwischen + 18° und + 26° am Pulkowaer Verticalkreise. A. N., No. 2904, Bd. 121.

88. CAPE OF GOOD HOPE. 1890. A Catalogue of 3007 Stars for the Equinox 1890 from Observations made at the Royal Observatory, Cape of Good Hope, during the Years 1885 to 1895.

89. CINCINNATI. 1890. A Catalogue of 2000 Stars for the Epoch 1890. Publications of the Cincinnati Observatory, No. 13. p same as Paris 75.

90. DUNSINK. 1890. Mean places of 717 Stars deduced from Observations made with the Meridian Circle at Dunsink. Dublin, 1896. $s = 0$; p same as 71.

91. GLASGOW. 1890. Second Glasgow Catalogue of 2156 Stars for the Epoch 1890 deduced from Observations made at the Glasgow University Observatory during the Years 1886 to 1892. Glasgow, 1892.

92. KÜSTNER. 1890. Veröffentlichung der Königlichen Sternwarte zu Bonn, No. 2. $s = 0$.

93. RADCLIFFE. 1890. Catalogue of 6424 Stars for the Epoch 1890. Formed from Observations made at the Radcliffe Observatory, Oxford, during the Years 1880–1893.

94. BATTERMANN. 1895. Resulte aus Beobachtungen von 379 Anhaltsternen und 1640 durch Anschluss bestimmten Sternen, angestellt in den Jahren 1892-1897 am Grossen Berliner Meridiankreise von Dr. H. Battermann. Berlin, 1899. $s = 0$.

95. CINCINNATI. 1895. Catalogue of 2030 Stars for the Epoch 1895. Publications of the Cincinnati Observatory, No. 14. $s = 0$; p same as 71.

96. TUCKER (a). 1895. Meridian Circle Observations of 310 Standard Stars. Publications of the Lick Observatory, Vol. iv. Sacramento, 1900.

97. TUCKER (δ). 1897. The entire list of stars was very carefully observed by R. H. Tucker, of the Lick Observatory, in the years 1896 and 1897. It was intended to publish the results of these observations in full in this connection, but the preparation of this work has been so long delayed that it now appears superfluous, in view of the fact that a much more detailed report than could be given here will appear in a forthcoming publication of the Lick Observatory. The following note is by Mr. Tucker:

"Each star was observed twice in each position of the instrument, fixed circle East and West, and "the greater part of the stars above 70° were similarly observed at both culminations.

"The places were reduced with the Declinations from the catalogue of Louis Boss, *Declinations of "Fixed Stars, U. S. Northern Boundary Commission*, 1879.

"The probable error of a single observation is ± 0″.18. The probable error of observation for the "mean of four, in the two positions is ± 0″.12, including the effect of graduation error."

The reduction to Auwers' system has been applied and the results have been employed with a uniform weight of 3.

98. WIRTZ (δ). 1900. Bestimmung der Deklinationen von 487 Sternen und der Polhöhe der Bonner Sternwarte aus Beobachtungen . . . . im Ersten Vertical. Veröffentlichung der Königlichen Sternwarte zu Bonn, No. 3.

99. DUNSINK. 1900. Mean Places of 1101 Stars deduced from Observations made with the Meridian Circle at Dunsink. Dublin, 1899. *p* same as Paris, '75.

100. KÜSTNER (*a*). 1900. Veröffentlichung der Königlichen Sternwarte zu Bonn, No. 4.

Yearly Series.

101. 1835–1869. EDINBURGH. Astronomical Observations at the Royal Observatory, Edinburgh.

102. 1836–1869. CAMBRIDGE. Astronomical Observations made at the Observatory of Cambridge.

103. 1862–1876. RADCLIFFE. Results of Astronomical Observations made at the Radcliffe Observatory.

104. 1862–1887. MADRAS. Meridian Circle Observations.

105. 1879–1882 (*a*). BRUSSELS. Annales de l'Observatoire Royal de Brusselles, Nouvelle Series. *s* same as Nautical Almanac; *p* same as 57.

106. 1887–1896. GREENWICH. Annual volumes.

Method of Reduction.

Approximate positions for 1875 were obtained from whatever source was available. Many of these were the result of a previous reduction, and with very few exceptions the assumed places differed from the final values only by fractions of a second. The assumed proper motions were in part the result of a previous reduction, others were taken from Auwers' Bradley and other sources.

These assumed coordinates were then reduced to the epoch of the various catalogues in which the star was found, using for this purpose the formula

$$\alpha = \alpha_{1875} + \left[\frac{d\alpha}{dt}\right](\tau - 1875) + \tfrac{1}{2}\left[\frac{d^2\alpha}{dt^2}\right](\tau - 1875)^2 + \tfrac{1}{6}\left[\frac{d^3\alpha}{dt^3}\right](\tau - 1875)^3$$

α being the Right Ascension or Declination of any star.

τ the epoch of the catalogue.

The formulæ for the differential coefficients for the epoch 1875, using the constants of Struve and Peters, are as follows, in which

α = the Right Ascension.

δ = the Declination.

μ = the Proper Motion in Right Ascension.

μ' = the Proper Motion in Declination.

$$\frac{d\alpha}{dt} = 3.^s07225 + [0.126115] \sin\alpha \tan\delta + \mu.$$

$$\frac{d\delta}{dt} = [1.302206] \cos\alpha + \mu'.$$

$$\frac{d\mu}{dt} = [5.988]\, \mu \cos\alpha \tan\delta + [4.812]\, \mu' \sin\alpha \sec^2\delta + [4.99]\, \mu\, \mu' \tan\delta.$$

$$\frac{d^2\alpha}{dt^2} = [4.63380_n]\left(\frac{d\alpha}{dt} - \mu\right) + [5.98778]\left(\frac{d\alpha}{dt} + \mu\right)\cos\alpha \tan\delta + [4.81169]\left(\frac{d\delta}{dt} + \mu'\right)\sin\alpha \sec^2\delta + [4.9866]\, \mu\, \mu' \tan\delta + 0.^s000\,032\,210.$$

$$\frac{d^2\delta}{dt^2} = [4.63380_n]\left(\frac{d\delta}{dt} - \mu'\right) + [7.16387_n]\left(\frac{d\alpha}{dt} + \mu\right)\sin\alpha + [6.7367_n]\, \mu^2 \sin 2\delta.$$

$$\frac{d^3\delta}{dt^2} = [2.0987]\left(\frac{d\alpha}{dt} + \frac{\mu}{2}\right)\sin\alpha + [7.1639_n]\left(\frac{d^2\alpha}{dt^2} + \frac{d\mu}{dt}\right)\sin\alpha + [3.0255_n]\left(\frac{d\alpha}{dt} + \mu\right)\frac{d\alpha}{dt}\cos\alpha.$$

The numbers enclosed in brackets are logarithms.

For $\frac{d^3a}{dt^3}$ the Right Ascension and Declination were reduced to 1825 and 1925, using for this purpose the first and second differential coefficients already computed. $\frac{d^2a}{dt^2}$ was then derived for these dates, the differences giving $\frac{d^3a}{dt^3}$ with all necessary precision. For checking these values the tables given by Gould* were employed from 0^h to 12^h, neglecting proper motion. From 12^h to 24^h the tables of Oppolzer† were similarly used.

As already stated the catalogue places were reduced to Auwers' system whenever the necessary corrections were available. A correction for proper motion was also applied in all cases where the necessary data could be found.

Let τ be the epoch of the catalogue,

t the mean date of observation, usually different from τ,

μ'' the proper motion employed in forming the catalogue,

μ the proper motion assumed in this discussion,

The correction will be $(\tau - t)\ (\mu - \mu'') = \delta_\mu \alpha$.

It is perhaps superfluous to state that both t and μ'' are unknown in case of many of the older catalogues.

Let n be the difference between the corrected catalogue place and the assumed place, reduced as above explained to the epoch of the catalogue,

Then each catalogue furnishes an equation of the form

$$\sqrt{p}\,(\Delta\alpha + T\Delta\mu = mn)$$

In which p is the weight of the catalogue place,

$\Delta\alpha$ the correction to the assumed Declination, or Right Ascension,

$\Delta\mu$ the correction to the assumed proper motion,

$T = 1875 - t$.

A least square solution gives the most probable values of $\Delta\alpha$ and $\Delta\mu$.

The method of solving the equations is one very commonly employed in cases like this and is as follows:

Let t_0 be the weighted mean of the catalogue epochs, or of the epoch of observation when this differs from that of the catalogue,

$t_1,\ t_2 \quad t_n$ the epochs of the respective catalogues,

$T_1,\ T_2 \quad T_n = (t_1 - t_0),\quad (t_2 - t_0) \quad (t_n - t_0)$

ΣpT should be zero.

* *Catálogo de Las Zonas Estelares,* Appendix, Table iv, Cordoba, 1884. In using this table it must be remembered that the value of p^3 as given in column four should be doubled. See *Ast. Nach.*, Bd. 137, p. 295.

† *Lehrbuch zur Bahnbestimmung der Kometen und Planeten,* Vol. i, Table XII.

Then we have

$$\Delta\alpha = \frac{\Sigma pn}{\Sigma p} \qquad \Delta\mu = \frac{\Sigma pTn}{\Sigma pT^2}$$

Check $\Sigma pvv = \Sigma pnn - (\Sigma pn)\,\Delta\alpha - (\Sigma pTn)\,\Delta\mu$

$\Delta\alpha$ for 1875 will be the above $\Delta\alpha + (1875 - t_0)\,\Delta\mu$.

An example follows which will illustrate the various steps in the process:

Star. B A C 3140

Assumed Coordinates and proper motion for 1875.0.

$\alpha = 9^h\ 7^m\ 10^s.87$ $\mu = +.0056$

$\delta = 54^\circ\ 32'\ 11''.15$ $\mu' = +.068$

	Catalogue.	τ	t	*No. Obs.*	μ''	n	p	pt	pn	T	pT	pTn	pT^2	v
1	Bradley	1755	54.2	3	+.0056	—0.009	.3	—13.74	—0.0027	—103.22	—30.97	+0.2790	+3199.20	—0.063
2	Piazzi	1800	04.83	9		+0.261	.08	+ 0.39	+0.0209	— 52.59	— 4.21	—1.0962	220.92	—0.300
3	Groombridge	1810	08.8	6		—0.244	.2	1.76	—0.0488	— 48.62	— 9.72	+2.3668	471.42	+0.208
4	Dorpat	1814	14.11	2		—0.212	.2	2.82	—0.0424	— 43.31	— 8.66	+1.8444	376.71	+0.179
5	Pond	1830	31.54	13		+0.070	.4	12.62	+0.0280	— 25.88	—10.35	—0.7280	269.36	—0.091
6	Madras	1835		11		+0.042	.3	10.50	+0.0126	— 22.42	— 6.73	—0.2814	150.08	—0.061
7	Rümker	1836		6		—0.040	.2	7.20	—0.0080	— 21.42	— 4.28	+0.1720	92.02	+0.022
8	Armagh	1840	34.74	2		+0.006	.1	3.47	+0.0006	— 22.68	— 2.27	—0.0138	52.21	—0.025
9	Gilliss	1840	41.85	1	+.011	—0.010	.05	2.09	—0.0005	— 15.57	— 0.78	+0.0080	12.48	—0.005
10	Edinburgh	1842	42.18	5		+0.225	.5	21.09	+0.1125	— 15.24	— 7.62	—1.7100	115.52	—0.239
11	Oeltzen's Arg'er	1842	42.12	1		—0.118	.05	2.11	—0.0059	— 15.30	— 0.77	+0.0944	12.24	+0.104
12	Greenwich	1845	44.87	6	+.011	—0.186	.7	31.41	—0.1302	— 12.55	— 8.79	+1.6368	110.88	+0.173
13	Radcliffe	1845	47.9	7	+.004	+0.103	.9	43.11	+0.0927	— 9.52	— 8.57	—0.8858	81.70	—0.114
14	Paris	1845	41.6	18		—0.043	1.1	45.76	—0.0473	— 15.82	—17.40	+0.7482	274.92	+0.028
15	Poulkova	1855	47.80	5	+.0056	—0.086	1.0	47.80	—0.0860	— 9.62	— 9.62	+0.8256	92.16	+0.075
16	Greenwich	1860	59.5	3	+.004	—0.013	.9	53.55	—0.0117	+ 2.08	+ 1.87	—0.0247	3.99	+0.010
17	Radcliffe	1860	59.2	4	+.004	—0.003	.4	23.68	—0.0012	+ 1.78	+ 0.71	—0.0021	1.26	.000
18	Yarnall	1860	72.5	4		—0.112	.7	50.75	—0.0784	+ 15.08	+10.56	—1.1872	160.06	+0.117
19	Brussells	1865	66.00	4		+0.032	1.1	72.60	+0.0352	+ 8.58	+ 9.44	+0.3008	80.84	—0.031
20	A. G. Zones	1875	75.2	2		—0.131	.3	22.56	—0.0393	+ 17.78	+ 5.33	—0.6943	94.34	+0.138
21	Paris	1875	81.2	2		+0.039	.3	24.36	+0.0117	+ 23.78	+ 7.13	+0.2769	168.98	—0.028
22	Stockholm	1875	75.53	3		—0.130	.4	30.21	—0.0520	+ 18.11	+ 7.24	—0.9360	130.32	+0.137
23	Madras	1878.40	78.61	5		+0.098	.5	39.31	+0.0490	+ 21.19	+10.60	+1.0388	224.72	—0.089
24	Greenwich	1880	84.24	7	+.0056	+0.045	2.9	+244.30	+0.1305	+ 26.82	+77.78	+3.5010	2085.04	—0.032
							13.58 Σp	779.71 Σpt	—0.0607 Σpn		— 0.08 ΣpT	+5.5322 ΣpTn	+8481.37 ΣpT^2	

$$t_0 = \frac{779.71}{13.58} = 57.42$$

Weighed mean date = 1857.42

$$\Delta\alpha = \frac{-0.0607}{13.58} = -0.^s0045$$

$$\Delta\mu = \frac{5.5322}{8481.37} = +0.^s00065$$

$$\Delta\alpha_{1875} = -0.0045 + \big(0.00065 \times (1875 - 1857.42)\big) = +0.0069$$

Assumed α	9^h	7^m	$10^s.87$
Final value	9^h	7^m	$10^s.877$
Assumed μ			$+0.^s0056$
Final value			$+0.^s00625$

Σpv^2	0.1277
Σpn^2	0.1315
$-(\Sigma pn)\ \Delta\alpha$	-0.0003
$-(\Sigma pT^2)\ \Delta\mu$	-0.0036
Check	0.1276

	Catalogue.	τ	t	No Obs.	μ''	n	p	pt	pn	T	pT	pT^2	pTn	v
1	Bradley	1755	52.2	6	+.068	+0.03	.6	— 28.7	+ .018	—1.05	— .630	+ .662	— .019	— .28
2	Piazzi	1800	04.9	7		+0.24	.3	+ 1.5	+ .072	— .53	— .159	.084	— .038	+ .10
3	Lalande	1800				+1.77	.0	+ 0.0	— .000	— .58	— .000	.000	— .000	+1.62
4	Groombridge	1810	09.5	6		—0.82	.6	+ 5.7	— .492	— .48	— .288	.138	+ .236	— .94
5	Pond	1830	31.9	20		—0.13	1.0	+ 31.9	— .130	— .26	— .260	.068	+ .034	— .17
6	Taylor	1835		11	+.02	—0.51	.5	+ 17.5	— .255	— .22	— .110	.024	+ .056	— .54
7	Rümker	1836		6		+1.30	.5	+ 18.0	+ .650	— .21	— .105	.022	— .136	+1.27
8	Edinburgh	1840	40.2	3		—0.02	.3	+ 12.1	— .006	— .17	— .051	.009	+ .001	—0.03
9	Armagh	1840	52.2	5		—0.48	.5	+ 26.1	— .240	— .05	— .025	.001	+ .012	— .46
10	Greenwich	1840	40.0	21		+0.66	3.0	+120.0	+1.980	— .18	— .540	.097	— .356	+ .64
11	O' Argelander	1842				+0.26	.0	+ 00.0	— .000	— .16	— .000	.000	— .000	+ .25
12	Greenwich	1845	44.0	32	+.02	+0.24	3.0	+132.0	+ .720	— .14	— .420	.059	— .101	+ .24
13	Radcliffe	1845	46.8	13	+.06	—0.87	2.0	+ 93.6	—1.740	— .11	— .220	.024	+ .191	— .86
14	Paris	1845	39.5	6		+0.41	2.0	+ 79.0	+ .820	— .18	— .360	.065	— .148	+ .39
15	Poulkova	1855	47.8	5	+.068	—0.55	2.0	+ 95.6	—1.100	— .10	— .200	.020	+ .110	— .54
16	Greenwich	1860	59.5	3	+.06	+0.05	1.0	+ 59.5	+ .050	+ .02	+ .020	.000	+ .001	+ .10
17	Yarnall	1860	59.7	8		+0.48	1.5	+ 89.6	+ .720	+ .02	+ .030	.001	+ .014	+ .53
18	Paris	1860	63.8	13		—0.81	2.0	+127.6	—1.620	+ .06	+ .120	.007	— .097	— .75
19	Brussels	1865	66.2	4		+0.45	1.0	+ 66.2	+ .450	+ .09	+ .090	.008	+ .040	+ .53
20	Ast. Gesellschaft	1875	75.2	2		—0.26	1.0	+ 75.2	— .260	+ .18	+ .180	.032	— .047	— .15
21	Paris	1875	81.2	2		—0.11	1.0	+ 81.2	— .110	+ .24	+ .240	.058	— .026	+ .02
22	Respighi	1875	76.1	22		—0.12	1.5	+114.2	— .180	+ .19	+ .285	.054	— .034	— .01
23	Stockholm	1875	75.2	1		—0.26	.3	+ 22.6	— .078	+ .18	+ .054	.010	— .014	— .16
24	Madras	1878.4	78.6	5		+0.79	1.5	+117.9	+1.185	+ .21	+ .315	.066	+ .249	+ .91
25	Greenwich	1880	84.0	7	+.068	—0.21	2.0	+168.0	— .420	+ .26	+ .520	.135	— .109	— .08
26	Kasan	1885		3	+.068	—0.23	1.0	+ 85.0	— .230	+ .28	+ .280	.078	— .064	— .09
27	Tucker	1897	97.0	4		—0.42	3.0	+291.0	—1.260	+ .40	+1.200	.480	— .504	— .24
							33.1 Σp	1902.3 Σpt	—1.456 Σpn		— .034 ΣpT	+2.202 ΣpT^2	—0.749 ΣpTn	

$$t_0 = \frac{1902.3}{33.1} = 57.5$$

Weighted mean date 1857.5

$$\Delta\delta = -\frac{1.456}{33.1} = -0''.044$$

$$\Delta\mu' = -\frac{0.749}{2.202} = -0''.340$$

Σpv^2	$= +8.74$
Σpn^2	$= +9.05$
$-(\Sigma pn)\ \Delta\delta$	$-.06$
$-(\Sigma ptn)\ \Delta\mu'$	$-.25$
Check	8.74

$\Delta\mu'$ is here the correction to the centennial proper motion.

$$\Delta\delta_{1875} = -0''.044 - \big(.0034 \times (1875 - 1857.5)\big) = -0''.104$$

Assumed δ		54° 32′	11″.15
Final value		54° 32′	11″.05
Assumed	$\mu' = +0.068$		
Final value	$+0.0646$		

Weights.

In case of the Right Ascensions the weights have been taken from Auwers' values, *Astronomische Nachrichten*, Bd. 151, for all authorities found there. For other cases the attempt has been made to conform as closely to this system as practicable.

For the Declinations the system of weights is nearly the same as that given by Davis.* The most noticeable differences between the weights here employed and those of Newcomb are, first, the greater value assigned by Newcomb to the Poulkova and Washington catalogues; and second, in general the greater increase in weight corresponding to an increase in the number of observations. This last feature is not usually very conspicuous in the present discussion, as there are comparatively few cases where the number of observations is large. For the purpose of comparison the weights assigned by Newcomb to the authorities employed in the above example are given below, together with such as are given by Boss† in connection with his investigation.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Wght. here used	.6	.3	.0	.6	1.0	.5	.5	.3	.5	3.0	.0	3.0	2.0	2.0	2.0	1.0	1.5	2.0	1.0	1.0	1.0	1.5	.3	1.5	2.0	1.0	3.0
Newcomb	.5			.4	1.0					3.0		4.0			5.0	1.5	2.5								2.5		2.0
Boss		.1		.3	.8	.2		.6	.3	1.5		2.5	.6	1.0	3.0	1.0	.7	3.0	1.5								

This comparison will illustrate the different conclusions which have been reached as to the relative merits of some of the authorities. It is not claimed that the weights here employed are in all cases the best, but the effort has been made to follow a consistent system throughout in order to reach results which shall be so far as possible homogeneous.

The Star List.

The list of 254 latitude stars which follows includes 74 which are found in Newcomb's new Fundamental Catalogue. The places of these have been taken directly from that publication, applying the reduction to Auwers' system as explained below. Polaris is an exception, the position being taken without change from Newcomb. There are also three stars given in Davis' paper before referred to.—*The Declinations and Proper Motions of Fifty-six Stars*—the declinations of these have been taken from that publication.

The coordinates of the remaining stars—180 right ascensions and 177 declinations—have been derived as explained in the preceding pages.

As Newcomb's system is no doubt preferable to that of Auwers' for the reason that

* *Declinations and Proper Motions of Fifty-six Stars*, pages 14–18.

† *Declinations of the Fixed Stars, Report of the U. S. Northern Boundary Commission*, Appendix ii.

it represents more closely the actual state of the celestial sphere, it is very desirable that we should be able to refer our coordinates to that system. This may be very readily done by employing the formulæ and tables given by Newcomb for passing from one system to the other. These are reproduced here for the convenience of any wishing to make the change. The reduction of the declinations to the system of Boss is also included.

In what follows N refers to the system of Newcomb,

A refers to that of Auwers.

On page 156 of Newcomb's memoir is given for the difference of the Equinoxes

$$N = A + {}^s.006 + {}^s.00100\,(T - 1875)$$

Combining this with the difference depending on the Declinations, page 165, the reduction in Right Ascension for any time T has the form

$$N = A + \Delta\alpha + \Delta\mu\,\frac{(T - 1875)}{100}$$

with a similar expression for the Declination.

In the table, divisions A and B give the data for reducing the Right Ascensions and Declinations respectively from the system of Auwers to that of Newcomb; C for reducing the declinations to the system of Boss.

Declination.	A		B		C	
	$\Delta\alpha$	$\Delta\mu$	$\Delta\delta$	$\Delta\mu'$	$\Delta\delta$	$\Delta\mu'$
	s	s	″	″	″	″
+ 85°			− .00	+ .37	− .04	+ .30
80	− .017	+ .119	+ .03	+ .45	− .07	+ .30
75	− .008	+ .127	+ .04	+ .46	− .10	+ .27
70	− .000	+ .129	+ .02	+ .32	− .13	+ .10
65	+ .004	+ .127	+ .03	+ .27	− .14	− .00
60	+ .005	+ .124	+ .09	+ .26	− .10	− .10
55	+ .005	+ .123	+ .19	+ .32	− .04	− .10
50	+ .002	+ .128	+ .22	+ .36	+ .04	− .10
45	− .014	+ .111	+ .30	+ .09	+ .07	− .35
40	− .012	+ .109	+ .32	− .72	+ .08	− 1.20
35	− .009	+ .096	+ .29	− .86	+ .06	− 1.33
30	− .004	+ .090	+ .26	− .81	+ .05	− 1.22
25	+ .004	+ .091	+ .24	− .85	+ .06	− 1.18
20	+ .006	+ .093	+ .24	− .94	+ .09	− 1.27
15	+ .009	+ .094	+ .31	− 1.00	+ .15	− 1.36
10	+ .011	+ .098	+ .36	− .98	+ .18	− 1.31
+ 5	+ .012	+ .103	+ .36	− .92	+ .19	− 1.24
0	+ .012	+ .108	+ .39	− .80	+ .20	− 1.16
− 5	+ .012	+ .113	+ .42	− .75	+ .23	− 1.14
− 10	+ .010	+ .113	+ .55	− .80	+ .34	− 1.25
− 15	+ .010	+ .115	+ .74	− .72	+ .48	− 1.30
− 20	+ .009	+ .116	+ .89	− .54	+ .58	− 1.30
− 25	+ .009	+ .125	+ .99	− .44	+ .66	− 1.40

The reduction for proper motion is the second term in each of the above expressions. For example, for Declination 80°

$$\mu_N = \mu_A + .00119\ (T - 1875)$$

$$\mu'_N = \mu'_A + .0045\ \ (T - 1875)$$

$$\mu'_B = \mu'_A + .0030\ \ (T - 1875)$$

The results of a direct comparison of the stars common to the catalogues of Newcomb and Auwers will be found in No. 3742, *Astronomische Nachrichten*, in an article by Dr. Fritz Cohn entitled "Vergleichung des Newcomb'schen Fundamenentalcatalogs mit dem Auwers'schen A. G. C."

In the pages which follow the column headed *B. A. C.* gives the number corresponding to the star's place in the British Association Catalogue, with the exception of five not found in that publication. The magnitudes are from various sources and do not claim great precision. The column headed *A* gives the number of authorities employed in deducing the corresponding coordinate. Where N or D occurs in this column it implies that the corresponding coordinate is taken from Newcomb or Davis, as the case may be.

The differential coefficients include the proper motions μ and μ' in accordance with the formulæ given on page 287.

To illustrate the reduction to any epoch, let the Right Ascension and Declination of No. 3 be required for 1755:

$$1755 - 1875 = -120$$

Therefore

$$\alpha_{1755} = 0^h\ 10^m\ 33^s.963 - 120 \times 3^s.11489 + \tfrac{1}{2}\,(120)^2 \times 0^s.0002643 + 0^s.019 \times (-1.20)^3.$$
$$= 0^h\ 4^m\ 22^s.046$$
$$\delta_{1755} = 37^\circ\ 59'\ 14''.89 - 120 \times 20''.0272 + \tfrac{1}{2}\,(120)^2 \times (-0''.000295) - 0''.175 \times (-1.20)^3$$
$$= 37^\circ\ 19'\ 9''.80$$

Auwers' Bradley gives

$$\alpha = 0^h\ 4^m\ 22^s.08$$
$$\delta = 37^\circ\ 19'\ 10''.0$$

Definitive Positions 1875.0.

	B. A. C.	Mg.	α 1875.0	$\frac{d\alpha}{dt}$	$\frac{d^2\alpha}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\alpha}{dt^3}$	μ	δ 1875.0	$\frac{d\delta}{dt}$	$\frac{d^2\delta}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\delta}{dt^3}$	μ′	$\frac{A}{\alpha}$	$\frac{A}{\delta}$
			h m s					° ′ ″						
1	16	5.1	0 3 49.785	+ 3.09580	+.0003283	+ .025	+ 00092	45 22 35.55	+20.0460	−.000162	— .171	—.0054		N
2	LL 220	7.5	10 12.247	3.12214	2468	.017	+.00069	35 47 41.51	20.0845	289	.174	+.0501	9	11
3	52	5.	10 33.963	3.11489	2643	.019	—.00547	37 59 14.89	20.0272	295	.175	—.0057	23	26
4	*60	6.2	12 7 151	3.13969	3169	.023	+.00133	43 5 48 13	20.0200	328	.178	—.0062	19	19
5	99	6.5	21 28.282	3 11329	1350	.011	—.00159	18 49 21.31	19.9573	510	.173	—.0090	16	18
6	126	4.2	0 25 54.538	+ 3 35929	+ 7016	+ .070	+.00049	62 14 29.79	+19.9212	— 639	— .217	—.0050		N
7	194	5.6	37 25.783	3.83965	16084	.270	—.00617	74 18 15.76	19.7567	994	.319	—.0307		N
8	222	4.6	42 11.898	3.10632	785	.009	+.00444	6 54 15.47	19.6803	915	.170	—.0349		N
9	259	3.9	49 49.230	3.30819	3068	.018	+.01211	37 49 14.99	19.6203	1129	.204	+.0380		N
10	318	5.0	1 00 50.736	3.41633	3822	.022	+.01410	43 16 31.70	19.2915	1396	.223	—.0602	20	22
11	361	7.	1 6 30.266	+ 3.01720	+ 186	+ .009	—.00504	— 7 26 49.97	+19.1745	— 1340	— .153	—.0413	15	16
12	394	6.7	12 45.553	3 93545	9621	.085	+.00744	64 0 6.49	19.0228	1877	.331	—.0293	17	18
13	360	2.	12 59.80	20.8603	15057		+.1229	88 38 33.81	19.0457	9659		+.0051		N
14	413	6.7	17 7.878	3.21167	1538	.009	+.00304	17 9 58.18	18.8985	1630	.182	—.0307	13	12
15	438	6.0	21 57.528	4.35677	14364	.157	+.02478	69 37 13.22	18.7107	2318	.436	—.0748		N
16	459	7.0	1 25 55.826	+ 3.17059	+ 1217	+ .008	+.00105	11 14 19.72	+18.6672	— 1774	— .174	+.0061	12	12
17	480	4.2	29 28.033	3.49478	3635	.016	—.01629	40 46 45.47	18.1746	2010	.230	—.3709		N
18	502	4.9	33 12.472	3.51639	3603	.016	+.00127	39 56 35.06	18.3968	2109	.233	—.0217		N
19	592	5.8	50 31.460	3.26527	1637	.007	+.00101	17 12 22.78	17.7500	2286	.182	—.0171	32	32
20	611	5.6	53 46.264	4.36499	10502	.070	—.00047	63 47 5.72	17.6345	3107	.414	+.0010		N
21	656	3.1	2 2 6.635	+ 3.54883	+ 3043	+ .009	+ 01168	34 23 41.61	+17.2389	— 2712	— .226	—.0355		N
22	706	6.	11 13.393	3.83707	4751	.014	—.00658	46 48 6.64	16.8415	3099	.277	—.0143	18	21
23	744	4.6	18 47.640	4.84970	13108	.077	—.00157	66 50 19.39	16.4952	4096	.518	+.0074		N
24	780	6.5	26 3.504	3.27527	1508	.004	—.00241	14 28 47.55	16.1580	2910	.170	+.0402	25	23
25	816	6.5	34 6.927	4.24693	6562	.015	+.00409	54 34 14.64	15.6597	3929	.344	—.0286	16	18
26	872	3.7	2 42 37.769	+ 3.51532	+ 2274	+ .002	+.00414	26 44 37.80	+15.1107	— 3410	— .197	—.1028		N
27	916	6.0	51 35.637	3.84960	3616	.001	—.00082	40 31 59.00	14.6504	3884	.250	—.0405	8	10
28	963	V.	3 0 2.496	3.87871	3554	.000	—.00031	40 28 20.47	14.1824	4061	.244	+.0045		N
29	981	5.0	3 13.561	3.84883	3368	— .001	—.00340	39 8 6.03	13.9878	4081	.234	+.0083	20	22
30	993	6.0	6 39.454	3.95407	3713	— .001	+.00518	42 2 5.78	13.7791	4259	.249	+.0164	14	17
31	1050	6.5	3 17 24.064	+ 6.09182	+ 17880	+ .020	+.00106	71 25 31.49	+13.0686	— 6798	— .747	+.0046	12	13
32	1068	3.8	20 23.777	3.24316	1167	.000	+.00305	9 17 43.01	12.8274	3687	.136	—.0366		N
33	1119	6.4	32 21.681	3.38265	1421	— .002	+.00128	16 7 42.19	12 0132	3998	.143	—.0304	23	22
34	1144	4.6	38 5.857	5.41987	10153	.026	—.00185	65 8 12.27	11.6256	6485	.493	—.0130	18	18
35	1231	6.0	49 29.036	3.53321	1598	.005	+.00340	22 6 57.66	10.7081	4390	.146	—.1052	31	28
36	1237	4.9	3 54 2.951	+ 4.95181	+ 6417	— .032	—.00335	58 48 19.96	+10.4740	— 6199	— .351	—.0006	14	18
37	1274	5.8	4 1 53.137	3.48607	1379	.006	+.00697	19 16 36.53	9.8497	4475	.129	—.0342		N
38	1286	5.6	5 53.405	5.23925	6978	.048	+.00063	61 31 58.83	9.5639	6755	.371	—.0136	13	16
39	1307	5.6	9 50.643	4.47574	3766	.026	+.00359	49 44 29.36	9.2099	5832	.237	—.0623	13	16
40	1364	6.5	18 9.030	3.80681	1792	.012	+.00483	31 9 16.66	8.5057	5056	.142	—.1161	17	17
41	1425	6.0	4 30 4.391	+ 4.70174	+ 3678	— .039	+.00035	52 49 39 86	+ 7.6519	— 6369	— .223	—.0166	16	16
42	1444	5.9	33 30.448	3.74561	1457	.012	+.00218	28 22 14.07	7.3602	5113	.117	—.0298	19	18
43	1486	3.3	43 3.312	3 25165	722	.005	+.03020	6 44 27.92	6.6416	4548	.072	+.0345		N
44	1496	6.0	46 30.153	7.52098	13291	.292	+.00303	74 4 17.30	6.3515	10441	.606	+.0298	11	16
45	1536	4.2	52 18.315	5.30905	4186	.077	—.00165	60 15 22.91	5.8237	7430	.232	—.0140		N
46	1555	7.0	4 56 54.749	+ 3.56872	+ 921	— .011	+.00001	21 6 1.57	+ 5.4353	— 5032	— .076	—.0156	16	16
47	1568	5.3	5 0 3.774	3.54044	836	.010	+.03669	18 28 30.56	5.2123	5062	.070	+.0272	38	38
48	1583	6.7	1 53.740	5.55689	4176	.096	—.00509	62 32 1.37	5.0380	7859	.224	+.0079	13	16
49	1598	6.8	6 30.813	9.34113	17142	.728	—.00238	78 16 57.33	4.6398	13270	.743	+.0019	12	12
50	*1611	5.0	5 6 45.382	3.13271	513	.005	—.00113	2 42 37.77	4.6206	4464	.046	+.0034	20	19
51	*1625	7.0	5 9 25 519	+ 3.50302	+ 725	— .010	—.00060	18 17 52.85	+ 4.3856	— 5003	— .058	—.0040	9	11
52	1687	1.7	18 25.625	3.21446	478	.006	—.00144	6 14 4.10	3.6099	4625	.038	—.0079		N
53	1662	6.4	22 8.816	18.55094	63412	8.022	+.01181	85 7 35.66	3.2903	26717	2.483	—.0069		N
54	1706	6.3	23 1.262	7.98044	7698	.436	—.00156	74 57 22.57	3.2342	11499	.349	+.0124		N
55	1751	5 5	29 55.061	5.99596	2712	.144	—.00177	65 37 34.15	2.5911	8678	.136	—.0337	14	17

* Maj.

	B. A. C.	Mg.	α 1875.0	$\frac{d\alpha}{dt}$	$\frac{d^2\alpha}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\alpha}{dt^3}$	μ	δ 1875.0	$\frac{d\delta}{dt}$	$\frac{d^2\delta}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\delta}{dt^3}$	μ'	$\frac{A}{\alpha}$	$\frac{A}{\delta}$
			h m s					° ′ ″						
56	1789	6.0	5 33 17.560	+ 2.98760	+.0000324	— .004	—.00026	— 3 38 10.93	+ 2.3379	—.004337	— .020	+.0062	15	14
57	1813	6.3	39 29.025	6.43751	2256	.195	—.00332	68 25 52.32	1.7300	9354	.107	—.0629	11	15
58	1821	6.0	39 34.191	3.44764	383	.010	—.00070	15 46 17.27	1.7864	5015	.021	+.0011	22	21
59	1846	5.3	42 31.641	3.36855	333	.009	—.00190	12 36 34.46	1.5116	4902	.016	—.0158	16	16
60	1862	6.0	45 16.259	3.40621	318	.009	—.00210	14 8 16.31	1.2898	4960	.014	+.0018	23	23
61	1874	7.0	5 47 50.816	+ 6.21420	+ 1221	— .171	—.00295	66 59 52.43	+ 1.0172	— 9050	— .053	—.0457	11	16
62	1923	6.0	54 17.298	4.32443	258	.033	+.00965	42 54 45.79	0.3511	6321	— .006	—.1487	23	23
63	1942	6.0	57 58.099	4.13501	182	.027	—.00032	38 29 28.93	+ 0.1357	6031	+ .002	—.0420	16	15
64	1970	6.5	6 2 0.277	3.61559	+ 141	.013	—.00245	22 12 28.27	— 0.1745	5268	.006	+.0008	20	19
65	2007	4.3	8 35.616	5.30028	— 399	.086	—.00012	59 3 10.51	0.7247	7721	.039	+.0271		N
66	2045	5.5	6 15 54.004	+ 5.24501	— 812	— .082	—.00218	58 28 56.15	— 1.3973	— 7622	+ .064	—.0072	18	18
67	2083	6.2	22 7.380	7.61230	4089	.378	— 03654	73 47 14.26	1.9664	10989	.214	—.0337	10	11
68	2101	7.5	22 48.877	3.62401	130	.013	—.00270	22 37 32.72	1.9910	5247	.034	+.0021	12	13
69	2126	4.4	26 8.672	3.24526	15	.007	—.00003	7 25 21.07	2.2870	4692	.028	—.0042		N
70	2139	6.7	27 57.173	4.12875	506	.025	—.00071	38 32 37.82	2.4613	5965	.057	—.0215	13	13
71	2159	5.1	6 30 24.188	+ 4.28990	— 698	— .031	—.00077	42 35 46.54	— 2.7119	— 6189	+ .069	—.0594	16	19
72	*2187	5.1	35 11.272	5.31695	2019	.084	—.00411	59 33 53.72	3.0706	7644	.135	—.0037	19	21
73	2233	6.0	44 3.520	3.59865	389	.012	—.00132	21 54 23.21	3.8614	5133	.060	—.0298	23	21
74	2301	6.5	55 33.689	3.81888	884	.015	+.01101	29 32 40.18	5 6255	5402	.091	—.8112	21	18
75	2317	6.3	7 1 33.458	11.67981	35652	1.495	+.00525	81 28 40.56	5.3582	16407	1.498	—.0362	15	19
76	2341	5.6	7 3 38.299	+ 4.69611	— 2349	— .044	—.00027	51 37 59.68	— 5.4925	— 6562	+ .171	+.0048	13	14
77	2358	4.1	5 28.829	3.06513	155	.004	—.00067	— 0 17 15.48	5.6309	4264	.057	+.0212		N
78	2365	7.7	7 48.006	5.20696	3758	.068	—.00529	59 8 14.81	5.8709	7231	.237	—.0243	13	14
79	2410	3.6	12 39.388	3.58903	726	.010	—.00189	22 12 37.58	6.2573	4944	.095	—.0056		N
80	2439	5.8	17 51.282	6.30888	8341	.142	+.00058	68 43 2.93	6.7301	8647	.438	—.0479		N
81	2473	4.8	7 22 50.261	+ 3.34290	— 523	— .006	—.00117	12 15 47.15	— 7.1017	— 4528	+ .088	—.0099		N
82	2488	5.8	27 26.887	4.37485	2480	.027	—.00280	46 27 12.20	7.4767	5886	.191	—.0091	11	11
83	2509	4.9	31 0.239	3.92828	1587	.015	—.00307	34 52 7.63	7.8851	5246	.149	—.1296		N
84	2551	3.7	36 53.968	3.63058	1096	.009	—.00233	24 41 44.71	8.2801	4790	.127	—.0515		N
85	2616	7.0	46 18.214	4.90192	4898	.039	+.00035	56 49 49.34	8.9950	6355	.305	—.0231	14	17
86	2585	6.6	7 46 43.781	+15.27834	— 123878	—1.757	—.00257	84 24 41.75	— 9.0370	— 19867	+4 573	—.0318	23	18
87	2660	5.4	53 29.442	2.99857	271	.001	—.00501	— 3 20 25.95	9.5220	3800	.087	+.0079	21	21
88	2676	6.3	56 27.588	3.54958	1169	.006	—.00455	22 25 9.48	9.7558	4475	.140	+.0018	16	16
89	2704	6.0	59 47.628	4.96971	5950	.034	— 00122	58 36 41.87	10.0901	6235	.352	—.0786	12	13
90	2786	5.2	8 12 28.130	3.65640	1661	.006	—.00176	27 37 14.44	11.3336	4417	.169	—.3769		N
91	2792	5.	8 14 19.908	+ 4.58132	— 4951	— .018	—.00274	53 37 12.17	—11.1928	— 5515	+ .314	—.0999	17	18
92	2819	3.5	19 51.800	5.04253	7647	.021	—.01719	61 8 1.23	11.6083	5957	.418	—.1155		N
93	2880	6.5	28 8.194	3.45679	1271	.002	—.00429	20 1 5.96	12.0785	3967	.158	.0000	21	21
94	2953	4.2	37 34.766	3.41847	1271	.001	—.00172	18 36 44.03	12.9579	3796	.160	—.2303		N
95	2982	5.5	43 3.436	5.00819	8968	.001	—.00328	62 25 39.75	13.0708	5472	.463	+.0237	27	24
96	3003	6.0	8 45 53.055	+ 5.22336	— 10816	+ .007	—.00501	65 4 47.54	—13.3693	— 5645	+ .524	—.0886	24	23
97	3052	6.0	50 36.236	3.35833	1157	.000	+.00301	16 3 35.26	13.5503	3547	.161	+.0371	26	23
98	3083	6.7	56 30.430	4.25797	5131	.001	—.01300	51 19 12.87	14.0420	4384	.319	—.0793	13	13
99	3109	6.0	9 0 29.562	3.61621	2148	.001	—.00407	30 9 19.01	14.2047	3656	.206	+.0062	17	17
100	3140	5.0	7 10.877	4.36340	6123	.008	+.00625	54 32 11.05	14.5532	4300	.354	+.0646	24	25
101	3170	6.5	9 11 56.642	+ 3.52033	— 1924	+ .002	—.00348	26 46 37.94	—14.9166	— 3369	+ .199	—.0167	9	11
102	3228	6.0	21 49.756	3.20010	838	.003	—.00289	8 43 56.79	15.4741	2902	.157	—.0093	13	14
103	3231	6.0	23 3.368	5.81249	21387	.152	+.01541	72 45 30.61	15.6072	5309	.799	—.0743	14	17
104	3281	6.0	30 33.134	3.76960	3445	.007	—.00295	40 47 59.00	15.9282	3265	.255	+.0113	19	21
105	3307	6.0	34 15.307	3.73939	3391	.008	—.00689	40 19 34.69	16.1742	3164	.252	—.0402	15	17
106	3375	7.0	9 46 9.550	+ 3.59771	— 2823	+ .009	—.00171	35 34 15.89	—16.7336	— 2820	+ .233	—.0030	15	14
107	3397	6.0	50 3.213	3.81469	4309	.015	—.00137	46 0 31.54	16.9601	2914	.278	—.0440	9	12
108	3468	6.0	10 3 48.030	3.57424	3096	.013	—.00551	38 1 0.17	17.5653	2452	.237	—.0340	11	12
109	3505	3.6	9 33.103	3.64573	3827	.017	—.01532	43 32 15.51	17.8074	2378	.254	—.0372		N
110	3495	5.6	11 9.018	9.80634	160804	6.885	—.09600	84 53 5.94	17.8886	6400	3.294	—.0540		N

* Mean A.B.

	B. A. C.	Mg.	α 1875.0	$\frac{da}{dt}$	$\frac{d^2a}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3a}{dt^3}$	μ	δ 1875.0	$\frac{d\delta}{dt}$	$\frac{d^2\delta}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\delta}{dt^3}$	μ′	$\frac{A}{\alpha}$	$\frac{A}{\delta}$
			h m s					° ′ ″						
111	3530	6.0	10 14 44.321	+ 3.59054	—.0003573	+ .016	—.01279	41 51 47.04	—18.1164	—.002235	+ .246	—.1404	21	21
112	3551	6.1	17 7.409	3.03233	159	.007	—.00501	— 3 26 35.23	18.0605	1838	.151	+.0070	20	18
113	3584	6.0	23 48.377	3.52476	3229	.015	—.00202	39 33 50.76	18.2753	2035	.235	+.0024	16	19
114	3647	5.0	33 23.690	4.17155	11213	.108	—.02817	66 22 13.50	18.7145	2150	.388	—.0752	23	25
115	3693	5.8	39 47.972	3.18389	1035	.009	—.00992	14 51 14.67	18.8904	1506	.179	—.0516	39	36
116	3725	5.1	10 45 59.573	+ 3.67412	— 5908	+ .042	—.00967	55 14 56.39	—19.0313	— 1614	+ .274	—.0136	21	23
117	3751	7.0	49 47.288	3.26704	1770	.012	—.00332	26 10 1.59	19.1295	1353	.195	—.0090	15	15
118	3787	7.8	58 35.045	3.21245	1677	.012	—.03152	25 52 40.14	19.3981	1146	.186	—.0596	17	18
119	3825	6.7	11 5 27.361	3.52927	5624	.045	—.00283	55 34 23.41	19.4987	1129	.248	—.0097	11	14
120	3877	4.0	17 24.428	3.13061	654	.010	+.00937	11 13 3.04	19.7823	761	.175	—.0734		N
121	3914	4.1	11 23 57.710	+ 3.63952	— 11151	+ .154	—.00860	70 1 14.71	—19.8307	— 744	+ .274	—.0239		N
122	3949	6.0	31 6.713	3.27501	4171	.035	—.00710	51 18 38.87	19.9299	514	.202	—.0348	11	13
123	LL. 22186	7.5	37 35.183	3.14463	1757	.015	—.00382	30 16 25.28	19.9408	361	.179	+.0176	5	5
124	4010	6.4	45 46.132	3.47944	3134	.032	+.34093	38 36 55.24	25.7877	321	.240	—5.7721		N
125	W.B. 956	7.0	49 54.785	3.12117	— 2712	.023	—.00537	42 42 33.60	20.0439	— 114	.176	—.0091	7	8
126	4063	7.0	11 57 11.829	+ 3.06441	+ 422	+ .010	—.00647	— 4 46 59.70	—20.0549	+ 32	+ .166	—.0022	20	16
127	4070	5.7	58 25.584	3.15165	— 48131	3.874	—.06178	86 16 47.85	19.9778	55	.191	+.0760	29	26
128	4074	6.0	59 20.134	3.07126	5797	.069	—.00880	63 37 53.58	20.1359	73	.168	—.0818	19	19
129	4099	6.5	12 4 9.300	3.06241	722	.011	—.00219	17 30 17.81	20.0439	167	.165	+.0070	18	18
130	4123	3.4	9 13.914	3.00081	4260	.044	+.01382	57 43 38.27	20.0356	263	.156	+.0024		N
131	4141	6.	12 13 0.273	+ 3.03607	— 1015	+ .013	—.00284	23 43 45.16	—20.0327	+ 337	+ .161	—.0108	20	19
132	4195	4.6	20 42.369	2.99891	1257	.014	—.00657	28 57 48.51	20.0527	480	.155	—.0803		N
133	4217	6.0	24 7.806	2.85950	2969	.030	—.03144	52 13 32.78	19.9400	519	.135	+.0032	21	20
134	4239	3.9	28 8.244	2.59786	5412	.087	—.01261	70 28 39 03	19.8964	547	.101	+.0069		N
135	4271	5.1	35 33.461	3.03725	165	.010	+.00488	10 55 29.28	19.9102	771	.160	—.0969		N
136	4300	6.	12 41 58.304	+ 2.58448	— 3569	+ .046	—.00020	63 27 49.45	—19.7291	+ 771	+ .100	—.0102	13	14
137	4318	7.	45 59.257	2.98460	436	.011	—.00232	17 45 15.18	19.6561	952	.151	—.0043	15	14
138	4371	6.	56 53.585	2.36184	2704	.038	—.02840	64 16 55.50	19.4285	920	.077	+.0109	15	D
139	4403	6.7	13 3 39.125	2.95067	297	.010	—.00589	17 30 56.71	19.2846	1261	.145	+.0011	10	D
140	4433	5.5	8 2.768	2.72915	1348	.016	—.00529	40 48 54.77	19.1675	1245	.114	+.0093	19	15
141	4467	5.7	13 14 42.758	+ 2.69642	— 1244	+ .015	—.00615	40 48 26.06	—19.0115	+ 1338	+ 110	—.0135		N
142	4510	5.4	23 51.663	2.21159	1520	.021	—.01198	60 35 30.75	18.7026	1228	.066	+.0240		N
143	*4562	5.8	34 42.246	2.86584	— 215	.009	—.00473	20 35 19.01	18.3386	1755	.128	+.0277	28	23
144	4604	7.0	42 11.369	+ 3.09164	+ 800	+ .007	—.00292	— 2 12 59.63	18.0891	+ 2021	.158	+.0044	12	14
145	4643	6.3	45 59.908	— 2.04548	+ 54886	—2.010	+.02175	83 22 45.61	18.0066	— 1240	.668	—.0593	19	23
146	4694	7.2	14 0 53.630	+ 2.66069	— 374	+ .009	+.00002	31 26 53.82	—17.4277	+ 2028	+ .101	—.0994	17	14
147	4701	6.0	3 37.069	2.24714	626	.010	—.00533	50 2 58.10	17.1566	1753	.066	+.0504	21	21
148	4728	6.0	9 21.039	2.42131	496	.009	—.00461	42 6 22.85	17.0451	1958	.079	—.1011	14	12
149	4758	6.0	14 39.780	2.46386	416	.009	—.00028	39 22 9.29	16.6933	2063	.081	—.0024	17	17
150	4825	6.2	29 31.903	2.45312	224	.007	—.00354	37 10 33.39	15.9886	2238	.078	—.0536	17	17
151	4841	6.0	14 33 30.806	+ 2.25487	— 212	+ .007	—.01069	44 10 55.50	—15.6918	+ 2100	+ .064	+.0293	16	19
152	4874	6.2	38 56.377	1.48735	+ 1046	— .005	+.00866	61 47 42.71	15.4542	1461	.045	—.0323	16	19
153	4905	4.6	45 37.472	2.76605	217	+ .005	+.00903	19 37 14.04	15.1218	2741	.102	—.0803		N
154	4926	5.7	50 19.265	2.82767	354	+ .004	—.00299	14 57 9.49	14.7674	2851	.106	—.0009		N
155	4949	4.9	55 36.075	0.93382	2856	— .021	—.01339	66 25 50.42	14.4330	993	.058	+.0170		N
156	4974	4.9	14 59 40.343	+ 1.97993	+ 195	+ .003	—.03865	48 8 30.82	—14.1646	+ 2060	+ .049	+.0361		N
157	5000	7.2	15 5 35.112	2.42969	72	.004	—.00047	33 33 11.89	13 8331	2625	.070	—.0023	11	10
158	5072	5.3	16 48.324	2.40058	136	.004	—.00477	33 22 55.55	13 0931	2701	.065	+.0104	16	21
159	5113	6.7	25 24.620	1.90462	376	+ .001	—.00212	48 8 35.78	12.5294	2221	.044	—.0050	15	14
160	5147	5.9	25 10.716	0.82293	2658	— .018	—.01874	64 37 46.26	12.1847	981	.057	+.0806	15	20
161	5180	5.8	15 35 14.345	+ 2.75440	+ 412	+ .002	+.00032	16 25 44.63	—11.8507	+ 3293	+ .082	—.0093	21	20
162	5210	6.5	39 26.853	1.62603	721	— .002	—.00812	52 45 22.11	11.5070	1979	.038	+.0352	15	15
163	5236	6.0	43 25.472	2.46853	265	+ .002	—.00190	28 32 28.75	11.2549	3026	.062	+.0011	16	19
164	5271	4.6	48 21.287	2.07185	178	+ .001	+.03903	42 48 8.18	10.2675	2631	.042	+.6288		N
165	5295	5.5	51 14.803	+ 2.18162	271	+ .001	+.00323	38 18 32.54	10.5978	+ 2743	.046	+.0844	19	20

* Maj.

	B. A. C.	Mg.	α 1875.0	$\frac{da}{dt}$	$\frac{d^2a}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3a}{dt^3}$	μ	δ 1875.0	$\frac{d\delta}{dt}$	$\frac{d^2\delta}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\delta}{dt^3}$	μ'	$\frac{A}{\alpha}$	$\frac{A}{\delta}$
			h m s					° ′ ″						
166	B.D.72.703	7.0	15 56 54.384	— 0.63714	+.0007861	— .054	—.01014	72 44 57.06	—10.2427	—.000767	+ .168	+.0179	6	7
167	5325	6.4	57 34.955	+ 2.96095	631	.001	—.00389	5 19 56.97	10.1956	+ 3756	.086	+.0169	19	16
168	5343	6.5	58 1.161	— 1.51902	13021	.090	+.00588	75 55 54.43	10.1955	— 1858	.297	—.0187	15	16
169	5366	6.0	16 2 26.482	+ 2.88865	553	.000	—.00184	8 52 4.99	9.8430	+ 3711	.079	—.0015	18	17
170	5405	6.0	7 4.377	+ 2.96279	614	.001	+.00069	5 20 31.84	9.4868	+ 3849	.081	—.0003	18	16
171	5462	5.5	16 14 24.859	— 1.80071	+ 12648	— .059	—.00052	76 11 29.11	— 8.9127	— 2293	+ .304	+.0030		N
172	5466	3.8	16 24.391	+ 2.64326	381	.000	—.00432	19 26 52.79	8.7129	+ 3500	.057	+.0463		N
173	5512	2.9	22 18.101	0.79905	1853	.010	—.00317	61 47 51.17	8.2369	1093	.044	+.0554		N
174	5568	6.0	32 32.500	1.74510	533	.002	—.00274	46 52 1.83	7.4603	2390	.029	+.0082	14	15
175	5619	5.8	39 15.046	2.21116	327	.000	—.00606	34 16 13.25	6.8496	3048	.033	+.0709	14	15
176	5658	6.0	16 44 17.644	+ 1.22618	+ 957	— .005	+.00315	55 37 55.19	— 6.5113	+ 1724	+ .028	—.0066	13	16
177	5703	6.3	49 55.234	2.45154	331	.001	—.00071	25 56 0.35	6.0480	3434	.035	— 0109	16	18
178	5752	5.5	57 4.066	+ 1.09339	959	— .005	—.00688	56 52 21.34	5.4073	+ 1549	.026	+.0306	20	16
179	5780	4.4	58 50.852	— 6.38651	30769	+ .560	+.00448	82 14 22.61	5.2927	— 8955	.924	—.0050		N
180	5774	5.9	17 1 46.818	+ 3.09194	521	— .004	—.00092	— 0 54 46.32	5.0679	+ 4385	.048	—.0281	22	21
181	5786	7.0	17 3 23.583	+ 2.47551	+ 325	— .001	—.00182	24 39 2.72	— 4.9452	+ 3519	+ .029	—.0421	13	16
182	5801	6.	5 23.866	1.14938	819	.004	—.00199	55 55 38.88	4.6969	1647	.022	+.0358	10	10
183	5828	3.2	9 53.866	2.46114	333	.001	—.00285	24 59 16.53	4.4989	3519	.026	—.1496		N
184	5842	4.8	12 42.531	2.21177	311	.001	—.00299	33 14 9.32	4.1053	3171	.020	+.0035		N
185	5911	5.7	23 25.523	1.58640	445	— .003	—.00092	48 21 56.97	3.2017	2297	.014	—.0149		N
186	5941	2.3	17 29 7.956	+ 2.78178	+ 333	— .002	+.00695	12 39 9.19	— 2.9184	+ 4042	+ .021	—.2256		N
187	6006	4.9	37 41.102	— 0.36028	1077	+ .004	+.00077	68 48 55.94	1.6344	— 513	.027	+.3151		N
188	6122	5.8	57 21.255	— 1.04540	571	+ .021	+.00081	72 0 59.20	— 0.2393	— 1522	+ .016	—.0078	19	21
189	6143	3.7	18 1 25.433	+ 2.84192	181	— .003	—.00546	9 32 51.52	+ 0.2215	+ 4136	— .002	+.0969		N
190	6193	6.	8 54.682	1.99699	213	— .001	—.00345	38 44 22.70	0.7839	2902	.002	+.0043	15	13
191	6203	5.3	18 11 45.540	+ 1.86336	+ 204	— .002	—.00170	42 7 3.70	+ 1.0309	+ 2707	— .002	+.0024		N
192	6232	6.5	15 2.707	2.31200	192	.001	—.00198	29 36 47.62	1.3258	3356	.006	+.0102	12	14
193	6246	6.3	17 0.418	1.40442	159	.003	—.00402	51 17 36.32	1.4358	2030	.002	—.0510	14	D
194	6258	6.0	18 33.020	1.40906	136	.003	—.00336	51 14 28.25	1.6091	2036	.002	—.0122	10	15
195	6300	5.7	24 24.823	2.48523	+ 162	.001	—.00113	23 47 3.76	2.1449	3593	.013	+.0137	19	19
196	6348	5.5	18 30 25.204	+ 1.03378	— 86	— .004	—.00171	56 57 1.74	+ 2.6403	+ 1481	— .007	—.0137	19	10
197	6373	6.5	36 53.277	0.72915	— 385	.004	—.00151	60 35 43.03	3.2589	1034	.012	+.0451	10	8
198	6387	4.3	40 16.953	2.57899	+ 168	.001	—.00297	20 25 41.21	3.1726	3684	.022	—.3341		N
199	6476	6.0	51 29.318	1.58105	+ 29	.002	—.00742	48 42 13.81	4.3436	2218	.012	—.1240	13	14
200	6491	3.3	54 16.088	2.24219	+ 134	.001	—.00148	32 31 9.37	4.7073	3156	.023	+.0029		N
201	6534	5.7	19 0 12.139	+ 2.28341	+ 142	— .000	+.00417	31 33 32.09	+ 5.1369	+ 3199	— .025	—.0706	9	11
202	6579 Pr.	6.0	8 50.808	1.55271	— 286	.002	—.01785	49 37 16.35	6.5555	2113	.022	+.6214	20	21
203	6599	4.5	12 1.813	2.07950	+ 102	.000	—.00251	37 54 43.78	6.2136	2854	.026	+.0140		N
204	6656	6.5	19 59.521	1.89539	+ 55	.001	+.00067	43 8 42.92	6.8221	2569	.024	—.0362	11	13
205	6697	3.9	26 33.255	1.51300	— 248	— .002	+.00108	51 27 51.02	7.5200	2021	.024	+.1250		N
206	6740	4.0	19 34 26.409	+ 2.36776	+ 108	+ .001	—.00102	29 51 58.67	+ 8.0787	+ 3128	— .042	+.0468	19	20
207	6784	5.0	41 40.937	2.27490	+ 201	+ .001	.00000	33 26 16.24	8.1687	2959	.039	—.4397	25	27
208	6830	6.0	48 26.257	1.76583	— 57	— .001	—.00267	47 36 35.63	9.1315	2249	.030	—.0070	17	20
209	6876	5.7	55 24.928	1.88461	+ 28	+ .000	+.00112	45 25 54.75	9.6580	2367	.033	—.0197	12	15
210	6915	5.6	20 1 43.209	2.22602	+ 218	+ .002	—.02003	35 37 44.60	9.7303	2730	.044	—.4269	16	20
211	6962	4.2	20 9 22.335	+ 1.88520	+ 39	+ .001	+.00067	46 26 17.74	+10.7147	+ 2277	— .036	—.0141		N
212	6998	5.3	13 51.062	2.30267	+ 191	+ .002	—.00035	34 35 35.01	11.0686	2754	.052	+.0108	14	18
213	7037	6.0	19 32.269	0.29206	— 3835	— .029	+.00119	68 28 49.72	11.5024	301	.077	+.0330	17	19
214	7094	5.6	28 2.298	2.83728	— 88	+ .002	+.00368	12 36 0.59	12.1104	3257	.092	+.0388	20	18
215	7140	4.8	32 56.283	2.67653	+ 94	+ .003	+.00244	20 45 48.92	12.4224	3016	.081	+.0112		N
216	7138	5.0	20 33 0.477	+ 3.07585	— 440	+ .001	+.00449	0 2 53.76	+12.4130	+ 3474	— .117	—.0029	20	19
217	7178	6.0	35 59.559	— 3.46948	— 38815	— .551	+.01342	80 59 35.47	12.6219	— 3971	.862	+.0019	25	25
218	7176	6.0	37 38.525	+ 1.27913	— 988	— .007	—.00011	60 3 13.32	12.8991	+ 1386	.039	+.1673	16	14
219	7213	4.5	42 32.435	2.33413	+ 314	+ .004	—.00011	36 1 55.75	13.0627	2527	.061	+.0026		N
220	7254	5.6	48 56.674	2.09498	+ 309	+ .004	+.00258	44 42 32.10	13.4748	2207	.053	—.0053	13	15

	B. A. C.	Mg.	α 1875.0	$\frac{da}{dt}$	$\frac{d^2a}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3a}{dt^3}$	μ	δ 1875.0	$\frac{d\delta}{dt}$	$\frac{d^2\delta}{dt^2}$	$\frac{(100)^3}{6}\frac{d^3\delta}{dt^3}$	μ′	$\frac{A}{\alpha}$	$\frac{A}{\delta}$
			h m s					° ′ ″						
221	7297	6.8	20 55 8.805	+ 2.28855	+ 385	+ .005	+.01945	39 45 52.58	+14.0843	+ 2370	— .060	+.2072	12	15
222	7326	7.0	59 11.374	2.24274	+ 429	+ .005	—.00089	41 8 4.30	14.0826	2259	.059	—.0476	16	17
223	7380	4.1	21 9 34.505	+ 2.99964	— 275	+ .004	+.00231	4 43 55.51	14.6840	+ 2900	.126	—.0764		N
224	7438	6.0	17 2.098	— 0.54914	— 13095	— .195	+.00906	76 29 8.40	15.2049	— 579	.210	+.0105	15	18
225	7509	7.3	28 59.097	— 0.17576	— 10728	— .162	—.00016	75 51 14.56	15.8451	— 225	.160	—.0107	14	14
226	7522	5.8	21 32 16.307	+ 3.00552	— 226	+ .005	+.00651	5 12 30.91	+16.0611	+ 2570	— .135	+.0308	19	19
227	7561	2.5	38 2.800	2.94569	— 54	+ .006	+.00058	9 18 9.89	16.3381	2424	.129	+.0093		N
228	7597	5.0	41 32.269	0.75768	— 4063	— .052	—.01174	71 44 50.27	16.4609	547	.065	—.0433	21	22
229	7610	6.7	44 48.584	1.07425	— 2310	— .026	—.00131	69 34 17.31	16 6339	799	.050	—.0313	19	19
230	7641	5.6	50 50.663	2.92387	+ 73	+ .006	—.00329	11 29 0.62	16.9434	2202	.130	—.0098	23	18
231	B.D.59.2444	7.4	21 55 23.038	+ 1.87498	+ 629	+ .009	—.01368	59 41 56.30	+17.1664	+ 1330	— .048	+.0044	2	3
232	7685	6.0	58 21.651	3.08735	— 444	+ .006	—.00274	— 1 30 36.43	17.2535	2203	.154	—.0418	22	19
233	7712	6.0	22 1 58.058	+ 2.81316	+ 482	+ .008	—.00505	21 5 42.22	17.3875	+ 1942	.119	—.0655	17	18
234	7732 Pr.	7.5	2 36.064	— 1.82387	— 41949	—1.214	—.07011	82 16 2.88	17.4382	— 1430	.551	—.0419	14	20
235	*7760	6.2	7 47.510	+ 1.37936	— 1001	— .010	—.00990	69 30 55.01	17.7058	+ 863	.042	+.0075	19	22
236	7796	5.1	22 15 21.940	+ 2.95157	+ 186	+ .008	+.00006	11 34 33.48	+18.0168	+ 1820	— .139	+.0166		N
237	7820	5.0	19 27.071	2.42089	1502	.015	—.00164	48 50 35.16	18.1416	1421	.080	—.0133	21	24
238	7843	5.5	24 18.856	2.73673	1053	.011	+.00236	31 55 59.80	18.3258	1541	.113	—.0058		N
239	7915	6.0	35 53.019	2.67372	1478	.014	—.00202	39 34 22.44	18.7157	1318	.107	—.0029	12	14
240	7932	5.1	38 31.178	2.66317	1578	.015	—.00220	41 9 49.01	18.8149	1270	.106	+.0148		N
241	7962	6.	22 44 43.689	+ 2.69296	+ 1680	+ .015	—.00053	41 17 30.61	+18.9762	+ 1185	— .110	—.0061	15	18
242	7978	6.7	47 28.894	2.72890	1638	.015	—.00037	39 30 12.46	19.0465	1156	.114	—.0121	9	12
243	8024	6.5	56 13.899	2.51745	2636	.027	—.00138	56 26 3.21	19.2766	925	.092	—.0064	14	12
244	8052	4.5	23 1 1.528	2.91336	1074	.011	—.00171	24 47 38.07	19.3660	997	.140	—.0279	20	21
245	8078	5.2	5 25.566	3.02596	291	.009	—.00173	8 2 29 52	19.5022	957	.157	+.0139		N
246	8122	6.8	23 13 22.079	+ 2.17376	+ 3954	+ .068	—.01451	73 0 21.60	+19.6084	+ 552	— .063	—.0321	15	15
247	8195	6.	25 8.838	2.93427	2146	.018	+.02341	38 32 58.87	19.7497	568	.144	—.0731	25	27
248	8229	4.3	32 0.619	2.92399	2500	.020	+.00139	42 34 34.12	19.9075	434	.144	+.0026		N
249	8252	6.5	37 0.710	2.89691	3494	.031	—.00112	52 27 33.04	19.9492	337	.139	—.0042	10	10
250	8284	6.0	43 19.993	3.02431	1642	.014	+.00403	28 8 47.79	20.0206	235	.159	+.0194	21	19
251	8317	7.5	23 49 18.287	+ 2.97533	+ 4392	+ .041	—.00191	56 42 59.50	+20.0216	+ 116	— .151	—.0108	13	14
252	8324	4.8	51 24.502	3.04540	1476	.013	—.00407	24 26 47.38	20.0143	+ 80	.163	—.0258		N
253	8356	7.0	56 21.235	2.90393	19789	.714	—.01147	82 16 38.46	20.0355	— 19	.141	—.0162	15	15
254	8365	6.5	23 58 39.339	3.07383	120	.010	+.00142	— 1 11 50.15	20.0000	— 60	.167	—.0539	23	24

* Maj.

II.

Latitude Determination at the Sayre Observatory.

Observations for Latitude at this institution were begun April 1, 1876, and ended August 19, 1895. They may be regarded as forming four different series as follows:

First.—Determinations depending on a list of 60 pairs of stars, the observations being distributed very unequally through the years 1876, '77, '78, '85, '86, '88, '89 and '90.

Second.—A list of 109 pairs observed from December 1, 1889, to December 13, 1890, each pair with two exceptions being observed both evening and morning. Sixteen pairs were common to both the old list and the new one, but the old list was entirely

reobserved (excepting three pairs) in connection with the new one, for the purpose of connecting the two series, thus insuring continuity in the results.

Third.—Series extending from October 10, 1892, to December 27, 1893. The same list, excepting a few objectionable pairs which were replaced when possible by more favorable ones, was employed as above—107 pairs in all.

Fourth.—Observation upon 41 pairs, forming four groups, employing the method of Küstner.* All of these pairs are found in the list used in Series Three. These observations extended from January 19, 1894, to August 19, 1895. As the results of this series have already been published,† no further comment is called for in this connection.

FIRST SERIES.

The Instrument.

A Zenith Telescope of three inches aperture and forty-one inches focal length, made by E. & G. W. Blunt, of New York, was employed throughout the entire campaign. It is said to have been purchased at second-hand from the U. S. Coast Survey in 1868, or thereabout. Upon taking charge of the Department of Astronomy at Lehigh University in 1875, I found the instrument in a dilapidated condition. Before attempting any serious work it was sent to Edw. Kahler of Washington, who furnished a new level and made some other repairs.

Level Value.

This was investigated by attaching the tube to the Mural Circle of the U. S. Naval Observatory. Though the mean value may be found in this way with reasonable accuracy, the method is not adapted to investigating the question of the uniformity of curvature of the tube. Four of the six micrometers with which the circle was provided were read for each position of the bubble.

The mean of fifteen such determinations gave for one division of the level the value

$$1''.06$$

No further attention was given to the matter until 1888, when a level-trier gave the value

$$0''.80$$

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* *Astronomische Nachrichten*, Bd. 126, No. 3015.

† TRANSACTIONS OF THE AMERICAN PHILOSOPHICAL SOCIETY, Vol. xx, Philadelphia, 1901.

The tube had been twice refilled in the interval. Whether from this or from some other cause there had been a change of curvature.

Except for those observations near the beginning of the period under consideration and those not far from 1888, it is obviously impossible to decide what value of the level ought to be employed. The safest plan appeared to be to exclude from the final results all those cases in which this correction was large. The limit of 1″.5 for the older observations and 2″.0 for the later ones was adopted. A few values were retained where these limits were slightly exceeded.

The Micrometer.

The value of one revolution of the screw employed during the different years, with the method of its determination, is as follows:

1876–'78	50.450 ± .009	Nine elongations of 51 Cephei and λ Ursæ Minoris.
1885–'86	50.5133 ± .0084	From the Latitude Observations.
1888	50.5633	One elongation each of 51 Cephei and λ Ursæ Minoris.

The observation of the old list in 1890 was carried on in connection with the new one. The details as to Micrometer and Level will be found in connection with the Second Series.

Method of Observing.

Previous to 1889 the Micrometer was provided with only one movable thread. One bisection of the star was made, the effort being to have the thread accurately on the star at the instant when the latter crossed the meridian as shown by the clock. This would not usually coincide with the instant of crossing the middle thread of the reticle, as it was not possible to adjust the instrument with great precision in this respect. The outstanding difference, however, was of little importance. The clock correction was determined with a small transit instrument and was always known with the requisite precision.

The level was read once, usually after bisection of the star.

A preliminary reduction of the observations up to June 20, 1877, seemed to show a tendency of the bubble occasionally to cling to the tube, thus producing fictitious level readings. After this time until the end of the work in 1878, an effort was made to overcome this difficulty, or to obtain evidence tending to show whether or not the readings were genuine, in the following manner: Whenever there was sufficient time between the stars two or more readings of the level were taken, the instrument being disturbed by

turning it slightly in azimuth after each reading. The individual readings would probably never agree exactly, even if the performance of the level were perfect, owing to want of precision in the vertical axis. Large deviations from the first reading were, however, regarded as sufficient ground for rejecting such observations.

It is perhaps an open question whether anything was gained by this procedure, as there are obvious difficulties in formulating a criterion for rejection founded on the evidence so furnished.

The work of 1885–'86 is in all essential respects a repetition of that of 1876–'78. The same star list was used with the exception of three pairs which precession had carried beyond the range of the Micrometer.

The series of 1888 was intended to be a repetition of the same procedure, with some improvements which it was hoped would add materially to the accuracy of the results. The Micrometer was thoroughly repaired and the old springs replaced with new ones. A level by Stackpole & Brother took the place of that of Kahler, which had been in use since 1876. A level-trier was also provided, with which it was proposed to make frequent tests of the sensitiveness of the tube.

Although the new level proved to be much better than the old one, it failed to meet the requirements in respect to precision, and was returned to the maker after a trial of six weeks. The difficulties in finding a tube of the required delicacy proved greater than was anticipated; a delay of nearly a year was the consequence.

Meanwhile, in the future prosecution of the work a more elaborate program had been decided upon. This included a reobservation of the old list, with the exception of the three pairs which were no longer available. It is with this part of the program that we are now concerned; that relating to the new list prepared at this time being treated in another section.

The distribution of the observations on the old star list, originally comprising 60 pairs, was as follows:

Year.	*Number of Observations.*	*Year.*	*Number of Observations.*
1876	137	1886	167
1877	178	1888	121
1878	12	1889	17
1885	115	1890	397
			Total, 1144

A number of the older observations, in which the level corrections were large or where the readings appeared to be fictitious, were excluded for reasons already given.

These are not included in the above summary. It must not be understood that this process of exclusion was employed merely as a convenient means of rejecting those determinations which gave inconveniently large residuals. On the contrary, the residuals given by the rejected observations were in the majority of cases smaller than those of many which were retained.

As may be supposed, the accuracy of these earlier observations was far below the standard since attained in this class of work. Their value lies mainly in the fact that they precede by several years the period when the problem of Latitude variation began to attract serious notice, and it may be claimed that they had some influence in directing attention to this important subject.

The probable error of a single determination for the various periods was as follows:

	″
1876	0.578
1877	.457
1885–86	.407
1888	.366
1889–90	.234

The values of the latitude for each day of observation follow. These of course depend on the values of the declination employed, no means for adjustment being at hand. In forming the means all have been given equal weight.

Latitude = 40° 36′ 20″ +

	ø	No.	Number Mean
1876 April 1	3.″92	6	
6	3.23	8	56
8	3.37	12	3″.65
10	3.86	1	
15	3.43	11	
21	4.09	16	
27	3.77	2	
Aug. 5	3.86	10	
7	4.03	13	
8	3.90	17	81
9	3.49	15	3″.56
10	3.08	15	
11	2.93	11	
1877 April 6	3.54	15	
7	4.29	11	
10	3.69	16	
11	3.44	1	
12	3.99	1	61
15	4.85	2	3.″90
16	3.94	1	
23	4.12	2	
24	4.67	1	
May 4	3.92	9	
6	4.82	2	
May 14	4.09	1	
16	3.99	1	
18	4.21	4	
28	4.22	1	
29	3.66	3	
30	4.41	1	21
31	3.35	2	3″.72
June 13	3.28	2	
14	2.90	2	
17	3.18	1	
18	3.80	3	
July 30	4.99	4	
31	4.18	7	
Aug. 2	4.02	4	
4	4.79	5	
5	4.19	7	
9	4.23	5	70
10	4.32	6	4″.24
11	4.19	11	
17	3.96	10	
18	4.22	7	
20	4.05	4	
Sept. 30	4.60	2	
Oct. 1	4.14	5	
2	4.22	5	
5	4.14	3	
6	4.06	4	26
7	3.96	4	4″.09
9	4.56	1	
13	3.08	1	
15	3.16	1	
1878 Mar. 18	3.31	3	
19	3.27	1	
20	4.02	3	
22	4.60	1	12
24	2.74	1	3″.51
25	3.60	1	
26	2.98	2	

	ϕ	No.	Number Mean
1885 Sept. 18	4.″22	8	
19	4.01	14	
20	3.96	15	
23	3.83	12	
24	3.63	11	
25	3.26	11	
26	3.54	9	115
27	3.69	9	3″.72
28	3.73	9	
29	3.19	7	
Oct. 3	4.16	2	
5	3.96	2	
10	3.32	2	
11	2.72	2	
16	3.71	2	
1886 April 10	3 78	8	
14	3.35	6	
15	3.33	8	
17	3.44	6	
18	3.75	6	
21	3.43	5	50
23	3.55	5	3″.46
29	3.56	1	
30	3.78	1	
May 5	2.51	1	
16	2.67	2	
17	2.96	1	
May 25	3.37	2	
28	3.84	3	
30	3.30	3	
June 1	3.29	10	
4	2.96	10	
5	3.33	3	
8	3.14	8	
12	3.43	1	95
13	2.95	2	3″.32
18	2.69	5	
20	2.89	9	
25	3.82	6	
26	3.38	7	
28	3.70	8	
29	3.60	9	
30	3.61	9	
July 1	3.85	4	
3	2.81	1	
4	3.76	5	
5	4.06	2	22
Aug. 4	4.32	2	3″.86
8	3.81	2	
9	4.28	2	
10	3.42	2	
11	4.10	2	
1888 Aug. 29	3.36	10	
30	2.68	12	
Sept. 2	3.17	15	
5	3.00	12	
6	3.01	2	
13	3.36	14	
14	3.31	13	121
18	3.62	2	3″.09
19	2.85	7	
21	3 27	9	
24	2.97	9	
26	2.70	9	
29	3.02	2	
Oct. 4	2.55	3	
9	3.62	2	

	ϕ	No.	Number Mean
1889 Dec. 1	2.″79	1	
4	3.41	1	
6	3.21	1	
7	2.86	2	
9	3.26	2	
11	2.90	3	22
13	3.09	1	3″.10
23	3.20	2	
26	3.47	3	
27	2.59	1	
1890 Jan. 18	3.07	3	
24	2.77	1	
27	3.40	1	
Feb. 6	3.24	2	
8	3.11	2	
15	3.50	3	15
16	3.62	1	3″.31
18	2.98	2	
20	3.40	2	
Mar. 8	3.30	2	
9	3.54	1	
Mar. 29	3.04	6	
April 1	3.50	17	
2	3.53	15	
3	3.54	3	
5	3.42	13	
7	3.49	4	
10	3.60	1	88
11	3.74	6	3″.52
12	3.63	6	
16	3.64	1	
18	3.80	11	
25	2.99	1	
28	3.33	1	
30	3.41	3	
May 2	3.48	8	
5	3.46	1	
8	3.54	8	
11	3.92	1	
12	3.66	2	
15	3.74	3	43
16	3.84	3	3″.62
17	3.99	3	
20	3.26	1	
21	3.64	3	
22	3.58	5	
27	3.88	2	
28	3.36	1	
31	3.33	2	
June 1	3.50	1	
3	3.17	1	
8	3.86	2	
14	3.65	1	
15	3.65	2	
18	3.68	3	78
19	3.34	3	3″.57
20	3.58	1	
25	3.45	15	
26	3.68	16	
27	3.19	1	
29	3.64	16	
30	3.52	16	

	ϕ	No.	Number Mean
1890 July 5	3.″66	9	
6	3.41	8	
11	3.51	1	
18	3.74	5	
19	3.79	5	55
20	3.70	10	3″.55
21	3.18	1	
22	3.38	8	
30	3.58	3	
31	3.23	5	
Aug. 3	4.09	1	
6	4.02	6	
9	3.31	2	
10	3.17	4	
14	3.21	3	33
15	3.33	3	3″.36
20	3.00	1	
23	3.13	3	
24	3.68	1	
27	3.07	3	
30	3.06	4	
31	3.02	2	
Sept. 1	3.82	2	
7	3.26	1	
18	3.77	3	
19	3.30	3	19
23	2.95	1	3″.55
25	3.56	3	
28	3.78	3	
29	3.47	3	
Oct. 8	3.51	3	
14	2.79	3	
15	2.78	3	
21	2.94	4	31
30	3.04	3	3″.15
31	3.23	6	
Nov. 1	3.19	4	
4	3.20	2	
5	3.71	3	
Nov. 13	2.99	5	
14	2.84	2	
21	2.88	2	
22	3.21	5	
24	2.67	3	
25	3.07	1	30
27	3.44	2	3″.05
28	3.11	5	
29	3.17	2	
30	3.19	1	
Dec. 12	2.60	1	
13	3.34	1	

These values are brought together for convenience of reference, in connection with the weighted mean date of the determination.

	Weighted Mean Date	Latitude	No. Obs.		Weighted Mean Date	Latitude	No. Obs.
1	1876.285	40° 36′ 23.″65	56	12	1888.702	40° 36′ 23.″09	121
2	76.607	23.56	81	13	89 980	23.10	22
3	77.287	23.90	61	14	90.137	23.31	15
4	77.420	23.72	21	15	90.269	23.52	88
5	77.609	24.24	70	16	90.369	23.62	43
6	77.763	24.09	26	17	90.484	23.57	78
7	78.222	23-51	12	18	90.554	23.55	55
8	85.736	23.72	115	19	90.629	23.36	33
9	86.301	23.46	50	20	90.724	23.55	19
10	86.459	23.32	95	21	90.818	23.15	31
11	86.551	23.86	22	22	90.900	23.05	30

The most noticeable feature of this series is the progressive diminution in the mean value which seems to have taken place, the minimum value in 1876 being apparently nearly the same as the maximum in 1890.

SECOND SERIES.

December 1, 1889, to December 13, 1890.

Before beginning operations on this series the instrument was thoroughly repaired by Saegmüller, of Washington, and a level was selected from some eight or ten which he had in stock and which were regarded as particularly fine tubes. As a result the performance was greatly improved in every way, as may be seen by reference to the probable errors found on page 302.

Level Value.

The level was examined by means of the level-trier five times during the year with the following results:

Date.	Value one division.	Thermometer.	Number determinations.
1889 November 21–23	1.24	46°	5
December 19–21	1.43	42	6
1890 July 14–15	1.16	78	5
November 11–12	1.16	43	4

One determination consists in moving the bubble over the entire length of the scale, or at least considerably more of it than is actually employed in observation, at intervals of two divisions of the micrometer screw, then moving it in the opposite direction at the same readings of the screw. From one to two minutes' time is allowed after each setting for the bubble to come to a condition of equilibrium. About one hour will usually be employed in this operation.

An example follows for illustrating the process and for showing something of the uniformity of the tube.

One division of the screw corresponds to one second of arc in the inclination of the bar.

Thermometer 44.5°		*Micrometer*	*Bubble*		*Mean*	*Bubble*		*Mean*	*Thermometer* 44.9°
			N	*S*		*N*	*S*		
	1	48	4.5	25.2	14.85	3.7	24 4	14.05	
	2	46	6.0	26.7	16.35	5.6	26.3	15.95	
	3	44	7.4	28.1	17.75	7.5	28.2	17.85	
	4	42	9.5	30.3	19.90	9.4	30.2	19.80	
	5	40	11.4	32.2	21.80	10.8	31.5	21.15	
	6	38	12.9	33.7	23.30	12.4	33.1	22.75	
	7	36	14.5	35.2	24.85	14.4	35.1	24.75	
	8	34	15.7	36.4	26.05	15.5	36.3	25.90	
	9	32	17.9	38.6	28.25	16.9	37.6	27.25	
	10	30	19.2	40.0	29.60	18.4	39.2	28.80	
	11	28	20.8	41.5	31.15	20.1	40.9	30.50	
	12	26	22.4	43.1	32.75	21.9	42.6	32.25	
	13	24	24.0	44.7	34.35	23.1	43.9	33.50	
	14	22	24.9	45.6	35.25	24 6	45.3	34.95	
	15	20	26.7	47.4	37.05	26.2	47.0	36.60	
	16	18	28.0	48.7	38.35	27.5	48.2	37.85	

9—1	13.40	13.20
10—2	13.25	12.85
11—3	13.40	12.65
12—4	12.85	12.45
13—5	12.55	12.35
14—6	11.95	12.20
15—7	12.20	11.85
16—8	12.30	11.95
16″ =	12.74	12.44
One division =	1″.26	1″.29

The large value given in December was a source of perplexity. No satisfactory explanation for it could be found. The six individual values were as follows:

1″.48 1″.47 1″.36 1″.47 1″.36 1″.42

The value employed in reduction of the Latitude observations was 1″.245.

This level was examined about one year after the termination of this series, when it was found to have deteriorated to such an extent as to be practically worthless.

The Micrometer.

The value of one revolution of the micrometer screw was derived from thirty-seven elongations of 51 Cephei, 43 Cephei and δ Ursæ Minoris. The details are given in the following table. λ Ursæ Minoris was also observed at a number of elongations, but the results did not harmonize well, either among themselves or with those derived from the

other stars employed. This seems to have been due to the time required for the star to pass over the length of the screw. This was about $1^h\ 20^m$, the instrument being liable to considerable changes in this interval.

The range of observation was usually twenty-four revolutions, viz.: from scale reading 8 to 32, 20 being regarded as the middle of the field. The correction from progressive error, to be spoken of later, was applied when appreciable.

Assuming the value of one revolution to be 50″.5, each determination gives an equation of the form

$$R - 50''.5 = x + (T - 45°)\, y$$

Where R is the observed value of one revolution,

x the correction to the assumed value,

y the temperature coefficient,

T the thermometer reading.

	Date	Star	Elong.	Observed R	Thermom.	$T-45°$	$R-50''.5$
1	1889 Dec. 13	51 Cephei	E	50″.527	45°.5	+ 0°.5	+ .027
2	1890 Jan. 14		E	.523	34.8	— 10.2	+ .023
3	27		W	.483	31.9	— 13.1	— .017
4	April 2		W	.529	36.6	— 8.4	+ .029
5	5		W	.488	37.5	— 7.5	— .012
6	18		W	.485	37.0	— 8.0	— .015
7	Oct. 17		E	.501	54.5	+ 9.5	+ .001
8	21		E	.532	44.3	— 0.7	+ .032
9	30		E	.518	38.1	— 6.9	+ .018
10	Nov. 6		E	.508	45.1	+ 0.1	+ .008
11	10		E	.527	43.0	— 2.0	+ .027
12	Aug. 15	43 Cephei	E	.456	68.3	+ 23.6	— .044
13	23		E	.465	67.9	+ 22.9	— .035
14	23		E	.498	55.5	+ 10.5	— .002
15	24		E	.517	54.4	+ 9.4	+ .017
16	24		E	.511	54.4	+ 9.4	+ .011
17	27		E	.485	71.1	+ 26.1	— .015
18	30		E	.489	64.1	+ 19.1	— .011
19	Oct. 30		W	.472	36.0	— 9.0	— .028
20	30		W	.487	35.6	— 9.4	— .013
21	31		W	.485	36.6	— 8.4	— .015
22	31		W	.506	36.6	— 8.4	+ .006
23	Nov. 4		W	.476	32.3	— 12.7	— .024
24	4		W	.498	31.4	— 13.6	— .002
25	1889 Dec. 27	δ Ursæ Minoris	W	.467	41.1	— 3.9	— .033
26	27		E	.508	34.2	— 10.8	+ .008
27	28		W	.462	40.9	— 4.1	— .038
28	1890 Oct. 17		W	.511	56.1	+ 11.1	+ .011
29	17		W	.531	56.1	+ 11.1	+ .031
30	21		W	.531	45.5	+ 0.5	+ .031
31	21		W	.502	44.3	— 0.7	+ .002
32	30		W	.544	41.3	— 3.7	+ .044
33	30		W	.543	37.2	— 7.8	+ .043
34	Nov. 6		W	.491	47.6	+ 2.6	— .009
35	6		W	.473	45.6	+ 0.6	— .027
36	10		W	.530	44.2	— 0.8	+ .030
37	10		W	.522	44.2	— 0.8	+ .022

Giving equal weights to each of the 37 equations, we find in units of the third decimal place

$$x = + 2.15 \pm 2.69$$
$$y = - 0.367 \pm 0.262$$

Therefore

$$R = 50''.50215 - .000367\ (T - 45^\circ)$$

This is the value of R employed in the present series of Latitude Observations.

Progressive and Periodic Errors.

Two series of measurements of the screw have been made by means of the measuring engine of the U. S. Naval Observatory, designed by Prof. Harkness for investigating the photographs of the transit of Venus. This was done in February, 1891.

The correction for progressive error was adjusted by a graphic process, no assumption being made as to the law involved. The result is as follows. The first column gives the micrometer reading, the second the correction:

8	+ .0202	21	+ .0002
9	.0182	22	.0014
10	.0162	23	.0031
11	.0141	24	.0052
12	.0121	25	.0067
13	.0100	26	.0081
14	.0080	27	.0096
15	.0046	28	.0111
16	.0019	29	.0126
17	.0000	30	.0140
18	.0000	31	.0155
19	.0001	32	.0170
20	.0002		

If we derive this correction from the transits of the circumpolar stars observed for determining the value of one revolution of the screw, assuming the error to be uniformly progressive we have the following values:

8	and	32	+ .0208	14 and 26	+ .0052
9		31	.0174	15 25	.0036
10		30	.0144	16 24	.0023
11		29	.0117	17 23	.0013
12		28	.0092	18 22	.0006
13		27	.0071	19 21	.0001

The corrections deduced by means of the measuring engine were employed in this reduction.

A series of measurements was also made for the determination of the periodic errors, but the resulting probable error was of the same order of magnitude as the correction; moreover this will be pretty effectually eliminated from the mean of the observations; for these reasons no correction of this kind was applied.

The Reticle.

This was provided with three vertical threads and one horizontal, the latter for marking the middle of the field. As there were no means of making a close adjustment in collimation, the single bisection was made as formerly at the instant when the star crossed the meridian, as shown by the clock, which did not necessarily coincide with the time of crossing the thread. Except, however, in case of the few stars included whose declinations were large, the difference was not important.

The micrometer was fitted with five horizontal threads, the intervals being approximately equal to ten revolutions of the screw. These are numbered consecutively I, II, III, IV and V, a small piece of brass near one end showing the number of each thread for the purpose of avoiding mistakes in identification.

When the difference of zenith distance of the two stars forming a pair was not more than twenty revolutions, both stars were commonly bisected with number III. For greater distances II and IV were employed. I and V were not used.

It was therefore necessary to determine accurately the distance between II and IV, and as this was found to be variable to some extent, the operation must be frequently repeated. Writing II $+ x =$ IV, the following values of x, in terms of revolutions of the screw, were employed, each being the mean of ten or more determinations:

1889 December	3 —	1890 February	1	$x = .0904\,R$
1890 February	1 —	June	1	.0872
June	1 —	August	1	.0842
August	1 —	November	6	.0831
November	6 —	End		.0875

The Star List.

This comprises 111 pairs, 16 of which were found in the old list. Much care was given to the selection of the stars employed, the effort being to include all favorable pairs from 0^h to 24^h which could be observed without overlapping. As ideal pairs were not always to be found, a number were included which were objectionable in one way or another. It was somewhat doubtful whether these should be included in the final discussion, but with the exception of two or three cases no important difference could be discovered between the results from these and the more ideally perfect ones.

Each pair, with two exceptions, was observed both evening and morning. The number of evening observations was 842, of morning 637.

The reduction to apparent declination was carried through twice for each date of observation, once by each of the standard formulæ, viz.:

$$\delta = \delta_0 + \tau\mu' + Aa' + Bb' + Cc' + Dd'$$

and

$$\delta = \delta_0 + \tau\mu' + g\cos(G + a_0) + h\cos(H + a_0)\sin\delta_0 + i\cos\delta_0$$

A, B, C, D, h, H, g, G and i were taken from the American Ephemeris.

The Latitude Observations.

In planning this series of Latitude determinations the effort was made to observe each pair not less than five times, both evening and morning. Practically a few pairs were observed as many as twelve times, and in a few cases the number fell short of five. The evening observations were naturally more numerous than the morning. The usual method was to begin work soon after sundown and to observe from one to three or four hours, then to begin in the morning two hours or more before daylight and to stop only when sunrise ended the operation. Some of the brighter stars were observed with the sun above the horizon.

No attention was given to arranging the pairs in groups to facilitate adjustment. Under these circumstances, in connection with the fact that considerable care has been given to the reduction of the declinations, it is perhaps doubtful whether much will be gained by such an adjustment. The attempt has been made, however, to improve the results in this manner.

For this purpose the series has been divided into ten groups as follows:

		h	m		h	m	
Group	I Right Ascension	22	20	—	0	27	11 pairs
	II	0	38	—	3	01	10
	III	3	04	—	5	34	11
	IV	5	41	—	7	24	10
	V	7	29	—	9	35	12
	VI	9	47	—	12	36	11
	VII	12	57	—	15	06	11
	VIII	15	17	—	17	24	12
	IX	17	30	—	19	49	11
	X	19	56	—	22	16	12

Reduction to Mean of Groups.

When every pair of a given group has been observed on any night, the mean of the resulting latitudes will be based upon the mean value of the declinations of all stars of

this group. The differences between the individual values and the mean of all will furnish the corrections required to reduce the individual latitudes to the mean system. Obviously these corrections are not required when all of the pairs have been observed.

In the present case, as the observations were not arranged with reference to the groups, the number of evenings when all pairs were obtained was usually too small to furnish reliable values for these corrections. It is therefore necessary to combine for this purpose observations made on different evenings. This procedure is open to objection, but in this case no other seems available. The values of these corrections follow. They are given in units of the second decimal place.

Group	*Pairs*											
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
I	+ 18	+ 8	+ 12	— 19	— 7	— 11	— 20	+ 17	+ 17	+ 14	— 29	
II	— 32	— 5	+ 82	— 23	— 6	— 16	— 5	+ 9	— 6	+ 2		
III	+ 9	+ 32	— 55	— 26	+ 12	+ 4	+ 6	— 25	+ 43	— 13	+ 13	
IV	+ 7	+ 21	— 8	— 17	— 4	— 0	— 23	— 7	+ 6	+ 25		
V	— 8	— 29	+ 10	+ 12	— 14	— 8	+ 3	— 5	+ 28	— 7	+ 15	+ 3
VI	— 17	— 10	+ 37	— 45	— 22	— 3	— 9	+ 72	— 2	+ 16	— 17	
VII	— 2	— 8	+ 47	+ 17	— 12	— 14	— 5	— 3	+ 23	+ 5	— 3	
VIII	+ 18	— 28	+ 2	+ 11	+ 90	— 16	+ 20	— 37	+ 5	+ 20	+ 12	— 7
IX	— 13	+ 21	+ 2	+ 29	— 35	— 24	+ 1	+ 13	+ 34	+ 18	— 46	
X	— 29	— 29	— 21	+ 37	— 26	— 9	+ 10	+ 8	— 4	+ 6	+ 24	+ 33

The algebraic sum of the corrections for each group should be zero, except that pairs 1 and 3 of Group VII and 5 of Group VIII were observed only at the evening culmination. For these groups therefore the reduction is to the mean of the remaining pairs.

Final Adjustment.

After application, when necessary, of the above corrections, the means in case of each group are formed for convenient intervals, which in the present case average about 26 days. The resulting values follow:

	I		*II*		*III*		*IV*		*V*		*VI*		*VII*		*VIII*		*IX*		*X*	
	φ	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*	*φ*	*No.*
	//		//		//		//		//		//		//		//		//		//	
1889 Dec. 1–Dec. 28	3.036	65	3.062	37							3.053	47								
1890 Jan. 14–Feb. 20			3.392	17	3.205	48	3.259	8			3.150	6	3.329	48	3.401	29				
Feb. 22–Mar. 29					3.257	15	3.420	42	3.177	10					3.543	12				
Apr. 1–Apr. 12							3.373	3	3.576	47	3.280	1			3.850	17	3.605	29		
Apr. 16–May 11									3.803	19	3.467	34					3.603	15		
May 12–June 8											3.436	29	3.550	21			3.511	21	3.403	17
June 14–July 22	3.449	56	3.547	6									3.415	44	3.622	62			3.489	47
July 30–Aug. 23	2.982	8	3.324	30											3.442	35	3.191	19		
Aug. 24–Sept. 2			3.303	26	3.071	24									3.300	3	3.420	22		
Sept. 7–Oct. 14			3.890	2	2.970	45	3.089	32									3.279	58	3.078	22
Oct. 15–Nov. 5							3.118	28	3.173	45							3.101	11	3.039	33
Nov. 13–Dec. 13	3.001	82							3.067	36	3.065	11							2.958	55

In the tabular statement which follows, the differences of the consecutive values of the latitude are given with the corresponding weight. The latter is computed by the formula

$$p = \frac{nn'}{10\,(n+n')}$$

n and n' being the number of observations corresponding to the two values of the latitude. When two differences are combined, as in the case of III–IV (Jan. 14–Jan. 20) and (Feb. 22–March 29), the value of p given is the sum of the individual weights. The primed values I–II′, etc., refer to the morning series.

		p	$\frac{1}{p}$			p	$\frac{1}{p}$
I– II	— .026	2.36	.4237	VI– I	+ .017	2.73	.3663
II– III	+ .187	1.26	.7937	IV– VI	+ .109	0.34	2.9412
III– IV	— .121	1.79	.5587	VIII– II	+ .009	1.07	.9346
IV– V	+ .138	1.09	.9174	V–VIII	— .302	1.80	.5556
V– VI	+ .332	1.32	.7576	VIII– III	+ .220	2.48	.4032
VI– VII	— .114	1.22	.8197	VI– IX	— .112	2.36	.4237
VII–VIII	— .207	2.57	.3891	IX– V	— .044	2.64	.3788
VIII– IX	+ .187	1.49	.6711	VII– IX	+ .039	1.05	.9524
IX– X	+ .154	2.42	.4132	X– VI	— .033	1.07	.9346
X– I	— .043	3.29	.3040	VIII– X	+ .132	2.67	.3745
				II–VIII′	— .101	1.89	.5291
I– II′	— .231	1.17	.8547	III– IX	— .319	3.73	.2681
II– III′	+ .323	1.44	.6944	IX– II	— .051	2.54	.3937
III– IV′	— .119	1.87	.5348	IV– IX	— .133	2.85	.3508
IV– V′	— .055	1.73	.5780	X– III	+ .108	1.48	.6757
V– VI′	+ .002	.84	1.1905	V– IX′	+ .072	.88	1.1364
VI– VII′	— .179	.53	1.8868	X– IV	— .078	1.51	.6623
VII–VIII′	— .072	1.81	.5525	I– V	— .066	2.50	.4000
VIII– IX′	+ .245	1.07	.9346	VI– X′	+ .107	.92	1.0870
IX– X′	+ .108	.94	1.0638	II– VI	+ .050	2.51	.3984
X– I′	+ .040	2.56	.3906	I– VII	+ .034	2.46	.4065

Representing by 1.2; 2.3; . . . . 1.2′; 2.3′; . . . . the required corrections to the observed differences I–II, II–III, ... the conditions to be rigorously satisfied are expressed by the 26 equations which follow:

$\frac{1}{p}$	.4237	.7937	.5587	.9174	.7576	.8197	.3891	.6711	.4132	.3040	.8547	.6944	.5348	.5780	1.1905	1.8868	.5525	.9346	1.0638	.3906	.3984
1	1.2	2.3	3.4	4.5	5.6	6.7	7.8	8.9	9.10	10.1											
2	1.2										−1.2′										
3		2.3										−2.3′									
4			3.4										−3.4′								
5				4.5										− 4.5′							
6					5.6										− 5.6′						
7						6.7										− 6.7′					
8							7.8										− 7.8′				
9								8.9										− 8.9′			
10									9.10										−9.10′		
11										10.1										−10.1′	
12	1.2																				+ 2.6
13		2.3	+ 3.4													+ 6.7′	+ 7.8′				
14			+ 3.4	+ 4.5																	
15																		8.9′			
16					+ 5.6																
17						6.7													+9.10′		
18							7.8													+10.1′	
19								8.9													
20		2.3																			
21									9.10				+3.4′								
22									9.10					+ 4.5′							
23										10.1					+ 5.6′						
24																					
25																					
26																					

Solving these in the usual manner by correlates and employing the weights given above,

.3663	2.9412	.9346	.5556	.4032	.3788	.4237	.9524	.9346	.4065	.3745	.5291	.3937	.2681	.3508	.6757	1.1364	.6623	.4000	1.0871	
																				+.487
																				+.205
																				—.136
																				—.002
																				+.193
																				+.330
																				+.065
																				—.135
																				—.058
																				+.046
																				—.083
+6.1																				+.041
	+4.6	+8.2																		—.067
			+5.8	+8.3																—.065
			+5.8		+9.5															—.101
					+9.5	+6.9														+.176
							+7.9	+10.6												—.000
									+1.7	+8.10										—.001
											+2.8′	+9.2								+.035
												+9.2	+3.9							—.183
														+4.9	+10.3					+.010
																+5.9′	+10.4			+.093
																		+1.5	+6.10′	+.002
								+10.6											+6.10′	+.076
		+8.2									+2.8′									—.092
					+9.5											+5.9′				+.028

we derive the following system of normal equations:

	k_1	k_2	k_3	k_4	k_5	k_6	k_7	k_8	k_9	k_{10}	k_{11}	k_{12}	k_{13}
1	6.0482	.4237	.7937	.5587	.9174	.7576	.8197	.3891	.6711	.4132	.3040	.4237	1.3524
2	.4237	1.2784										.4237	
3	.7937		1.4881										.7937
4	.5587			1.0935									.5587
5	.9174				1.4954								
6	.7576					1.9481							
7	.8197						2.7065						—1.8868
8	.3891							.9416					— .5525
9	.6711								1.6057				
10	.4132									1.4770			
11	.3040										.6946		
12	.4237	.4237										1.1884	
13	1.3524		.7937	.5587			— 1.8868	— .5525					7.6675
14	1.4761			.5587	.9174								.5587
15									—.9346				
16	.7576					.7546							
17	.8197						.8197			— 1.0638			
18	.3891							.3891			—.3906		
19	.6711								.6711				
20	.7937		.7937										.7937
21	.4132			—.5348						.4132			
22	.4132				—.5780					.4132			
23	.3040					— 1.1905					.3040		
24													
25													.9346
26													

The solution of these equations gives for k_1, k_2 the values

$k_1 = +.1744$ $\quad$ $k_{14} = -.1370$
$k_2 = +.1268$ $\quad$ $k_{15} = -.1491$
$k_3 = -.0648$ $\quad$ $k_{16} = +.0005$
$k_4 = -.0400$ $\quad$ $k_{17} = -.1052$
$k_5 = +.1226$ $\quad$ $k_{18} = -.0579$
$k_6 = +.1198$ $\quad$ $k_{19} = +.1578$
$k_7 = +.0089$ $\quad$ $k_{20} = -.2325$
$k_8 = -.1866$ $\quad$ $k_{21} = -.0302$
$k_9 = -.2616$ $\quad$ $k_{22} = +.0418$
$k_{10} = -.0969$ $\quad$ $k_{23} = +.0298$
$k_{11} = -.2413$ $\quad$ $k_{24} = +.0701$
$k_{12} = -.0728$ $\quad$ $k_{25} = -.1253$
$k_{13} = +.0082$ $\quad$ $k_{26} = +.0243$

k_{14}	k_{15}	k_{16}	k_{17}	k_{18}	k_{19}	k_{20}	k_{21}	k_{22}	k_{23}	k_{24}	k_{25}	k_{26}	
1.4761		.7576	.8197	.3891	.6711	.7937	.4132	.4132	.3040				+ .487
						.7937							+ .205
													— .136
.5587							—.5348						— .002
.9174								—.5780					+ .193
		.7576							— 1.1905				+ .330
			.8197										+ .065
				+ .3891									— .135
	—.9346				.6711								— .058
			— 1.0638				.4132	.4132					+ .046
				— .3906					.3040				— .083
													+ .041
.5587						.7937					.9346		— .067
2.4349	.5556												— .065
.5556	1.8690	.3788										.3788	— .101
	.3788	1.5601										.3788	+ .176
			3.7705							.9346			.000
				1.5607									— .001
					1.5939	.3937					.5291		+ .035
					.3937	1.4555							— .183
							1.9745	.4132					+ .010
							.4132	2.7899				1.1364	+ .093
									2.9815	1.0870			+ .002
			.9346						1.0870	2.0216			+ .076
					.5291						1.4637		— .092
	.3788	.3788						1.1364				1.5152	+ .028

1. $2 = .4237\ (k_1 + k_2 + k_{12}) = +.097$
2. $3 = .7937\ (k_1 + k_3 + k_{13} + k_{20}) = -.091$
3. $4 = .5387\ (k_1 + k_4 + k_{13} + k_{14}) = +.003$
4. $5 = .9174\ (k_1 + k_5 + k_{14}) = +.147$
5. $6 = .7576\ (k_1 + k_6 + k_{16}) = +.223$
6. $7 = .8197\ (k_1 + k_7 + k_{17}) = +.064$
7. $8 = .3891\ (k_1 + k_8 + k_{18}) = -.027$
8. $9 = .6711\ (k_1 + k_9 + k_{19}) = +.047$
9. $10 = .4132\ (k_1 + k_{10} + k_{21} + k_{22}) = +.036$
10. $1 = .3040\ (k_1 + k_{11} + k_{23}) = -.011$

1. $2' = -.8547\ k_2 = -.108$
2. $3' = -.6944\ k_3 = +.045$
3. $4' = -.5348\ (k_4 - k_{21}) = +.005$
4. $5' = -.5780\ (k_5 - k_{22}) = -.046$
5. $6' = -1.1905\ (k_6 - k_{23}) = -.107$
6. $7' = -1.8868\ (k_7 - k_{13}) = -.001$
7. $8' = -.5525\ (k_8 - k_{13}) = +.108$
8. $9' = -.9346\ (k_9 - k_{15}) = +.105$
9. $10' = -1.0638\ (k_{10} - k_{17}) = -.010$
10. $1' = -.3906\ (k_{11} - k_{18}) = +.072$

The corrected differences of consecutive groups are now as follows:

I-	II	—.123
II-	III	+.278
III-	IV	—.124
IV-	V	—.009
V-	VI	+.109
VI-	VII	—.178
VII-	VIII	—.180
VIII-	IX	+.140
IX-	X	+.118
X-	I	—.032
Σ		—.001

Therefore

I =	II	—.123
	III	+.155
	IV	+.031
	V	+.022
	VI	+.131
	VII	—.047
	VIII	—.227
	IX	—.087
	X	+.031

Add to each quantity .0114 in order to make the sum of the corrections zero, we find the following series of values, which are applied to the latitudes derived from the different groups to reduce all to a homogeneous system.

I	+.″01
II	—.11
III	+.17
IV	+.04
V	+.03
VI	+.14
VII	—.04
VIII	—.21
IX	—.07
X	+.04

This system of corrections, together with those given on page 310, being applied to the individual determinations of latitude, we obtain the results given on the folding sheet, where will be found in detail the definitive latitude as given by each observation of the entire series.

	14											
	15											
	18											
	19											
	20											
	25	3.16	3.53									
	26	3.12	3.54	2.93								
	27											
	29	4.03	3.76	3.39	3.33							
	30	3.57	3.73	3.69								
July	5	3.49	3.79	3.90	3.19	3.62						
	6	3.11	3.15	3.34	3.36	3.50	3.41					
	18			3.02	3.43	3.63	3.44	3.14	3.83	3.80	3.54	3.47
	19				3.15		3.75					
	20			3.32	3.54	3.31	3 54	3.35	3.90	3.67	3.00	2.90
	21					3.51	3.08	3.38	3.12	3.51	3.65	3.77
	22						3.05	3.36	3.44	3.80	3.61	4.07
	30											
	31						2.86					
Aug.	3											
	6									3.40	2.40	2.92
	9											
	10											
	14									2.85	3.25	3.31
	15											
	20											
	23											2.95
	24											
	27											
	30											
	31											
Sept.	1											
	2											
	7											
	18											
	19											
	21											
	22											
	23											
	25											
	28											
	29											
Oct.	4											
	8											
	14											
	15											
	17											
	21											
	30											
	31											
Nov.	1											
	4											
	5											
	13	2.64	3.26	3.26	2.50	3.77						
	14	2.81	2.83	2.99	3.12	2.72						
	21	2.64	3.42	2.84	3.25	3.17		3.23	3.52	3.55	3.22	
	22	3.17	2.93	3.09	3.33	3.05	3.42	3.14	3.22	3.36	3.16	3.30
	24	2.98	3.35	2.87	2.95	3.18	2.85	3.15	2.53	2.39	3.11	3.08
	25											
	27											
	28	3.98	2.83	3.48	3.20	3 19	3.20	2.71	3.19	2.65		3.14
	29	2.46	2.59	2.91	3.09	2.79	2.79	3.21	2.83	3.08	2.61	2.58
	30	3.34	3.21	2.71	2.92	3.35	3.09	2.82	2.71			
Dec.	3											
	10											
	12						2.50	2.95	2.98	3.08	2.66	2.97
	13						3.24	1.91	2.87	3.31	2.88	2.55

July	20	3.22	3.73								
	21	3.04	3.69								
	22	3.52	3.42								
Aug.	6	3.64	3.81	3.65		3.35	3.18	3.38			
	10		2.92	3.79	3.41	3.40	3.36	3.63			
	14	2.85	3.31	2.75	3.00	3.00	3.41	3.26	3.16	3.42	
	23	2.91	2.61	2.90	3.11	2.75	3.26	3.05	3.14	3.01	
	27				3.54		3.29	2.97	3.34	3.33	2.97
	30			3.74	2.88	2.97	2.98	3.03	2 95		3.27
	31			2.47	3.14	3.30	3.52	3.33	3.02	2.88	3.41
Sept.	1								2.90	3.58	
	2								3.46	3.51	3.25
	18										3.32
	21										4.24

Aug.	23	3.14										
	27	3.48		3.41	2.98							
	30	3.87		3.13	3.32	2.53						
	31	3.54	3.15	3.31	3.23	2.94						
Sept.	1	3.46	3.09	2.61	2.90	3.40						
	2	3.06	3.69	3.48	3.47	3.48	3.11					
	18	3.33	2.72	3.44	2.77	3.45	3.34	2.78				
	21	3.60	4.31	3.26	2 95							
	22				2.98	2.83	3.22	2.72	3.17	3.93	3.78	3.53
	23					2.63	2.92	3.48	2.48	3.28	2.80	2.36
	28						3.18	2.91	3.30	2.90	3.08	3.54
Oct.	4						3.18	3.21	3.45	2.92	3.17	2.99
	8							2.65	2.83	3.59	3.99	
	14									3.15	2 47	2.75

Sept.	22	3.52						
	23	3.01	2.66	3.29	4.01			
	28	2.95	2.91	2.76	3.21			
Oct.	4	2 57	3.12	3.46	2.94	3.08	3 47	2.66
	8	3 68	3.12		3.29	3.21	2 88	3.56
	14	2.83	3.21	3 33	2.49	2.96	3.18	3.20
	17		3.22	3.48	2 97	3.28	2.98	3.43
	21			3.21	3.47	3.27	3.30	3.44
Nov.	5						2.67	3.21

9											
17											
18											
23											
24											
28											
29											
April 1											
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May 2											
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27											
28											
31											
June 1											
3											
8											
14											
15											
18											
19											
20											
25	3.16	3.53									
26	3.12	3.54	2.93								
27											
29	4.03	3.76	3.39	3.33							
30	3.57	3.73	3.69								
July 5	3.49	3.79	3.90	3.19	3.62						
6	3.11	3.15	3.34	3.36	3.50	3.41					
18			3.02	3.43	3.63	3.44	3.14	3.83	3.80	3.54	3.47
19				3.15		3.75					
20			3.32	3.54	3.31	3 54	3.35	3.90	3.67	3.00	2.90
21					3.51	3.08	3.38	3.12	3.51	3.65	3.77
22						3.05	3.36	3.44	3.80	3.61	4.07
30											
31						2.86					
Aug. 3											
6									3.40	2.40	2.92
9											
10											
14									2.85	3.25	3.31
15											
20											
23											2.95
24											
27											
30											
31											

July 20	3.22	3.73								
21	3.04	3.69								
22	3.52	3.42								
Aug. 6	3.64	3.81	3.65		3.35	3.18	3.38			
10		2.92	3.79	3.41	3.40	3.36	3.63			
14	2.85	3.31	2.75	3.00	3.00	3.41	3.26	3.16	3.42	
23	2.91	2.61	2.90	3.11	2.75	3.26	3.05	3.14	3.01	
27				3.54		3.29	2.97	3.34	3.33	2.97
30			3.74	2.88	2.97	2.98	3.03	2 95		3.27
31			2.47	3.14	3.30	3.52	3.33	3.02	2.88	3.41

17						3.46	3.29
18						3.33	3.31
23						4.05	
24						3.82	3.28
Aug. 23	3.14						
27	3.48		3.41	2.98			
30	3.87		3.13	3.32	2.53		
31	3.54	3.15	3.31	3.23	2.94		

	I											II										III											IV						
1889	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7
Dec. 1	〃 3.18	〃 3.36	〃 3.51	〃 3.48	〃 2.90	〃 2.69	〃 3.05	〃 3.48	〃 3.33	〃 3.32	〃 3.06	〃	〃 2.18	〃 3.37	〃 2.91	〃 2.41	〃 3.23	〃 2.47	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃
2	2.95	3.22	3.04	3.61																																			
4	3.60	3.11		2.91	3.82	3.31	4.25	3.33	2.58	2.99																													
6	2.41	2.92	2.59	2.99	3.34	3.11		2.64	3.17	3.39	3.10	2 47	2 67	2.78		2.55	2.72	2.75																					
7	2.92	2.62	2.64	2.50	2.62	3.13	3.04	3.26	2.87	3.08	2.93		2.88	3.83	2.80		2.86	3.70																					
9	2.63	3.08	3.08	3.53	2.74	2.79		3.14		2.85	2.92	2.43																											
11	2.69	2.97	2.53	3.02	2.96	3.03	2.61			2.88	2.41	2.67	3.05		2.59	3.08	2.70	2.92	3.13	3.03	3.02	3.33																	
13																																							
23																																							
26																																							
27											3.66	3.05	3.17	2.24	3.46																								
28											3.13	3.56	3.44		3.51	3.52	3.20	2.88																					
1890																																							
Jan. 14																1.97	3.52		3.39	3.49																			
17																	3.28	2.49	3.09	3.52	3.19																		
18																																							
27																																							
28																			3.84	2.90	3.78		3.01		3.99														
Feb. 5																				2.98	3.17	2.86	2.92	3.41	3.90	3.17	3.08	3.48	3.42	2.79	3.59								
6																				3.99	3 17	2.59	3.08	3.20	3.78	3.35	4.18	4.22	3.57		3.28								
8																																							
9																					4.03	3.70	3.05	3.19	3.28	3.34													
10																						3.81	4.08	3.22	3.38	3.25	3.16	3.52	3.10	3.16	3.14	3.15	3.45		3.40	3.04			
12																						2.96	2.86	3.82	3.29	3.67	3.50		3.96	3.55	3.27	3.39	3.19	3.64	3.03	3.20	3.44		
15																																							
16																																							
18																																							
20																																							
22																										3.58	3.25	3.55	3.58	3.27		3.58							
26																												3.02	3.15	3.45	2.83			3.28	3.20	3.16	3.44		
Mar. 6																														3.07	3.39	3.81	3.38	3.67	3.85	3.88	3.24		
7																																3.83	4.09	3.34	3.22	3.72	3.79		3.13
8																																4.04	3.45	3.87	3.28	3.90		3.57	3.59
9																																							
17																																						3.46	3.29
18																																						3.33	3.31
23																																						4.05	
24																																						3.82	3.28
28																																							
29																																							
April 1																																							
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25																																							
28																																							
30																																							
May 2																																							
5																																							
8																																							
11																																							
12																																							
15																																							
16																																							

3.10 3.44 3.08 3.19 3.53 3.35
3.37 4.05 3.49 3.62 3.24 3.23
3.21 3.38 3.67 3.33 3.87 3.66 3.60
3.91 3.52 3.08 3.47 2.75 3.05
3.29 3.10 3.31 3.47 3.68 3.33
3.23 3.36 3.07 2.58 3.20 3.84 2.84
2.99 3.67 2.55 3.22
3.21 3.57 4.10 4.28
3.21 3.46 3.75
3.04
3.15

.29 4.01
.76 3.21
.46 2.94 3.08 3.47 2.66
3.29 3.21 2.88 3.56
33 2.49 2.96 3.18 3.20 3.06 3.25 3.26 2.94

.48 2.97 3.28 2.98 3.43 3.30 3.20 3.32 3.70 3.43
.21 3.47 3.27 3.30 3.44 3.34 3.09 3.06 2.57 2.83 2.84
3.64 2.82 3.17 3.20 3.13 3.01 3.79 2.61 3.24 3.16 3.31 2.90
3.21 3.29 2.84 2.87 3.02 3.00 3.24 3.25 3.53
2.79 3.33 2.65 3.03 3.17 4.52 2.65 2.82 3.59 3.41 3.55 2.99 2.99
2.67 3.21 1.98 3.60 3.47 3.51 3.15 3.00 3.94 3.63 3.45 2.87 3.04 3.92 2.81 2.94

2.60 3.68 2.87 3.30 2.82 3.28 3.05 2.81 3.43 3.37 3.26 2.70
2.59 3.72 3.08 2.97
3.13
3.28 3.45 2.91 3.35 3.20 3.73
3.49 2.31 3.03
2.90 3.48 3.76 3.37 3.11
2.81 2.20 3.12 2.48
2.74 3.41 3.55 2.87 2.75 3.38 3.36
3.31 2.99 3.39 3.25 3.12

3.46	3.29																																						
3.33	3.31	3.67	3.49	3.10	3.09	3.49	3.29																																
4.05		2.28	3.68																																				
3.82	3.28																																						
		3.62		4.27		2.57		3.70																															
		2.68	3.09	3.29		2.76	3.46	3.38	3.16	3.17																													
				3.74		4.18	3.61	3.42	3.94	3.20																													
				3.49	3.49	3.82	3.32	3.75	3.67	3.70																													
										3.80	3.32	3.79																											
						3.49	3.90						3.37	3.37																									
				3.01	3.65	3.67	3.31	3.97	3.65	3.54	3.37	3.24	3.83	3.72																									
								3.50	3.18	3.48																													
											3.66	3.30	3.70	3.75																									
									3.24	3.85		3.90	3.80	4.15																									
									3.91	3.36	3.38	3.51	3.62	3.84	3.25		3.42																						
											3.70	3.47	3.43	4.42	4.54	4.18	3.79																						
													4.18	4.16	3.84	3.84	3.55	4.06	4.14	3.36																			
												4.04	3.57	3.96	3.76	3.84	3.80																						
															3.62			3.12		3.19																			
															3.42	3.64	3.33	3.68	3.76	4.15																			
																3.21	3.42	3.50	3.21	3.71																			
																		3.78	4.06	3.73																			
																		2.80	3.85	3.41	3.53	3 54	3.51																
																				3.13	3.49		3.07		3.65														
																				3.87	3.51	4.24	3.97	3.72															
																					3.96	3.82	3.72	3.63	3.77	3.48													
																					3.16		3.94		3.86	3.35	3.86												
																							3.84	3.39	3.19	4.14	4.02												
																							3.91	3.05	3.72	3.48	3.67	3.28	3.51										
																									3.58	3.11	3.17	3.56	3.08										
																										3.54	3.47	3.60	3.75	3.42	3.15	3.28							
																										3.17	3.14	3.48	3.70	3.33	3.43	3.56							
																											3.58	3.36	3.81	3.69	3.08	3.78	3.84	4.01					
																															3.10	3.44		3.08	3.19	3.53	3.35		
																																3.37	4.05	3.49	3.62	3.24	3.23		
																																	3.21	3.38	3.67	3.33	3.87	3.66	3.6
																																	3.91	3.52		3.08	3.47	2.75	3.0
																																	3.29	3.10	3.31	3.47	3.68	3.33	
																																	3.23	3.36	3.07	2.58	3.20	3.84	2.8
																																			2.99		3.67	2.55	3.2
																																				3.21	3.57	4.10	4.2
																																				3.21	3.46	3.75	
																																							3.0
																																							3.1

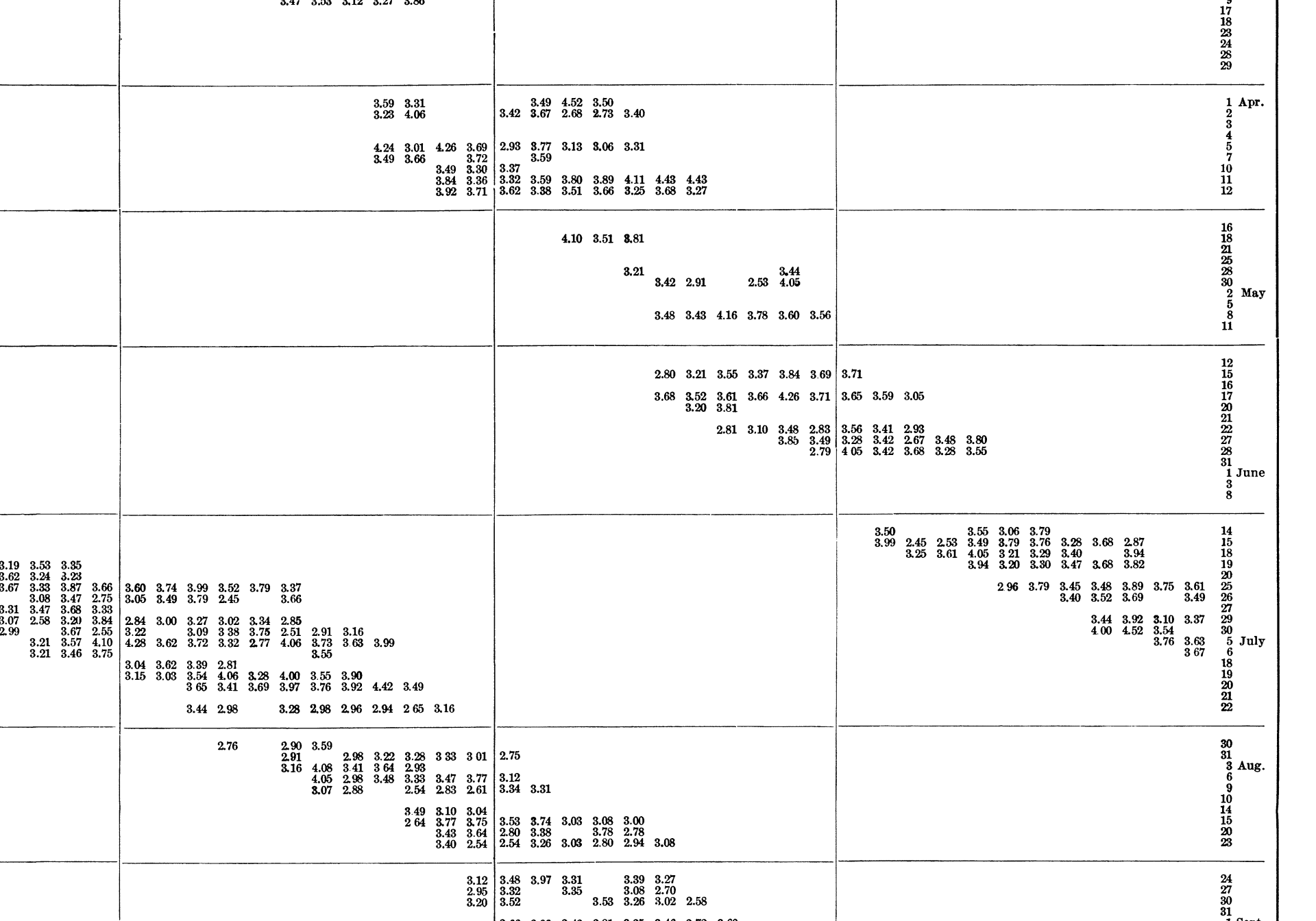
IV							
3	4	5	6	7	8	9	10
"	"	"	"	"	"	"	"
40	3.04						
03	3.20	3.44					
20	3.16	3.44					
85	3.88	3.24					
22	3.72	3.79		3.13	2.92		
28	3.90		3.57	3.59	3.29	3.74	3.63
			3.46	3.29			
			3.33	3.31	3.67	3.49	3.10
			4.05		2.28	3.68	
			3.82	3.28			
					3.62		4.27
					2.68	3.09	3.29
							3.74
							3.49
							3.01

V											
1	2	3	4	5	6	7	8	9	10	11	12
"	"	"	"	"	"	"	"	"	"	"	"
3.09	3.49	3.29									
	2.57		3.70								
	2.76	3.46	3.38	3.16	3.17						
	4.18	3.61	3.42	3.94	3.20						
3.49	3.82	3.32	3.75	3.67	3.70						
					3.80	3.32	3.79				
	3.49	3.90						3.37	3.37		
3.65	3.67	3.31	3.97	3.65	3.54	3.37	3.24	3.83	3.72		
			3.50	3.18	3.48						
						3.66	3.30	3.70	3.75		
				3.24	3.85		3.90	3.80	4.15		
				3.91	3.36	3.38	3.51	3.62	3.84	3.25	
						3.70	3.47	3.43	4.42	4.54	4.18
								4.18	4.16	3.84	3.84
							4.04	3.57	3.96	3.76	3.84
										3.62	
										3.42	3.64
											3.21

VI										
1	2	3	4	5	6	7	8	9	10	11
"	"	"	"	"	"	"	"	"	"	"
3.02	3.19	4.15	3.07	3.39	3.36	2.54				
2.85	3.64	3.42	2.55	2.92	3.56	3.68				
3.65	2.83	2.64	2.36	2.96	3.35	2.53		3.20	3.16	
3.97	2.89		3.11	3.68	2.90	3.14				
	2.93	3.32	2.59					3.25	3.13	3.23
3.17	3.98	2.73	3.76	3.09	2.90	3.81	3.51	3.47	3.69	3.27
										2.56
							3.95	2.89	3.62	3.09
									3.45	2.74
3.42										
3.79										
3.55	4.06	4.14	3.36							
3.80										
	3.12		3.19							
3.33	3.68	3.76	4.15							
3.42	3.50	3.21	3.71							
	3.78	4.06	3.73							
	2.80	3.85	3.41	3.53	3 54	3.51				
			3.13	3.49		3.07		3.65		
			3.87	3.51	4.24	3.97	3.72			
				3.96	3.82	3.72	3.63	3.77	3.48	
				3.16		3.94		3.86	3.35	3.86

VII											
1	2	3	4	5	6	7	8	9	10	11	1
"	"	"	"	"	"	"	"	"	"	"	"
	3.41		3.18	2.88	3.05	3.22	3.14	3.26	2.88		
	2.70		2.99	2.88	3.69	3.31	3.31	2.97	3.14	3.45	
	2.92		3.36	3.64	2.76		3.00	3.29	3.48	3.28	3.18
	3.17		4.27	3.45	2.88	3.02	3.54	3.85	3.51	3.30	2.47
				3.35	3.24	3.34	3.03	3.19	3.31	3.65	3.41
						3.83	3.08	2.95	3.76		3.06
									4.15	3.13	
										3.66	2.79
											4.04

																												3.50			3.55	3.06	3.79						14
																												3.99	2.45	2.53	3.49	3.79	3.76	3.28	3.68	2.87			15
																													3.25	3.61	4.05	3.21	3.29	3.40		3.94			18
3.19	3.53	3.35																													3.94	3.20	3.30	3.47	3.68	3.82			19
3.62	3.24	3.23																																					20
3.67	3.33	3.87	3.66	3.60	3.74	3.99	3.52	3.79	3.37																							2.96	3.79	3.45	3.48	3.89	3.75	3.61	25
	3.08	3.47	2.75	3.05	3.49	3.79	2.45		3.66																									3.40	3.52	3.69		3.49	26
3.31	3.47	3.68	3.33																																				27
3.07	2.58	3.20	3.84	2.84	3.00	3.27	3.02	3.34	2.85																										3.44	3.92	3.10	3.37	29
2.99		3.67	2.55	3.22		3.09	3.38	3.75	2.51	2.91	3.16																								4.00	4.52	3.54		30
	3.21	3.57	4.10	4.28	3.62	3.72	3.32	2.77	4.06	3.73	3.63	3.99																									3.76	3.63	5 July
	3.21	3.46	3.75							3.55																												3.67	6
				3.04	3.62	3.39	2.81																																18
				3.15	3.03	3.54	4.06	3.28	4.00	3.55	3.90																												19
						3.65	3.41	3.69	3.97	3.76	3.92	4.42	3.49																										20
																																							21
						3.44	2.98		3.28	2.98	2.96	2.94	2.65	3.16																									22
							2.76		2.90	3.59																													30
									2.91		2.98	3.22	3.28	3.33	3.01	2.75																							31
									3.16	4.08	3.41	3.64	2.93																										3 Aug.
										4.05	2.98	3.48	3.33	3.47	3.77	3.12																							6
										3.07	2.88		2.54	2.83	2.61	3.34	3.31																						9
																																							10
													3.49	3.10	3.04																								14
													2.64	3.77	3.75	3.53	3.74	3.03	3.08	3.00																			15
														3.43	3.64	2.80	3.38		3.78	2.78																			20
														3.40	2.54	2.54	3.26	3.03	2.80	2.94	3.08																		23
															3.12	3.48	3.97	3.31		3.39	3.27																		24
															2.95	3.32		3.35		3.08	2.70																		27
															3.20	3.52			3.53	3.26	3.02	2.58																	30
																																							31
																3.66	3.90	3.40	2.81	3.35	3.46	3.72	3.60																1 Sept
																																							2
																	3.22	2.79	3.76				3.01	3.40	3.37														7
																	3.36	3.93		3.45	2.83	3.44	3.12	3.70	3.68	3.72	3.74	3.14											18
																		2.91	3.34	2.80	2.49	3.24	2.98	3.19	2.97	3.22	3.55	3.42											19
																																							21
																																							22
																		2.07	2.69	2.73	3.04	2.89																	23
																					2.98	3.49	3.24	3.09	3.43	3.28	3.60	3.05											25
																				3.34	3.12	3.81	3.46	3.76	3.83	3.21	3.28	2.99	2.87										28
																				2.92	3.33	3.41	2.88	3.19	3.61	2.90	2.54	2.97	3.23										29
																																							4 Oct.
																						2.75	3.20	3.98	3.75	3.56	3.52	3.21	3.35	2.58	3.45								8
																							2.93	2.95	2.68	2.71		2.83	2.37		3.00	3.21	2.69						14
																							3.36	3.13	2.77	2.66	3.04	2.47	3.13	3.34	3.36	2.97	2.63						15
																																							17
																								2.98	3.54	2.58	2.99	3.06	3.29		2.98	3.21	2.41	3.57					21
																																							30
																									3.42	2.86	2.79	3.38	3.17	2.89	2.98	2.97	3.25	3.45					31
																									3.41	2.63	2.95	3.35	3.15	2.75	3.18	2.93	3.24	2.61	3.19	3.32	3.59		1 Nov.
																																							4
																																							5
																													2.79	3.37	2.64	2.63	2.83	3.18	2.75	2.96	3.09	3.29	13
																												2.73	2.91	3.28	2.94	3.09	2.94	3.28	2.87	2.91	2.99	2.74	14
																															3.16	3.26	2.93	3.23	2.98	3.46	3.38	2.95	21
																															2.98	3.10	3.35	2.72	3.13	2.96	2.81	2.99	22
																																	2.37	3.15	2.82	2.96	3.04	2.72	24
																																							25
																																							27
																																		2.96	3.31	2.86	2.52	2.76	28
																																			3.45	2.72	3.09	3.30	29
																																				3.14	3.23	2.90	30
																																							3 Dec.
																																							10
																																							12
																																							13



VIII												IX											X													
8	9	10	11	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11	12	1889
//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	
																																							1 Dec.
																																							2
																																							4
																																							6
																																							7
																																							9
																																							11
																																							13
																																							23
																																							26
																																							27
																																							28
																																							1890
																																							14 Jan.
																																							17
																																							18
3.14	3.26	2.88																																					27
3.31	2.97	3.14	3.45																																				28
3.00	3.29	3.48	3.28	3.18																																			5 Feb.
3.54	3.85	3.51	3.30	2.47		2.49	3.26																																6
3.03	3.19	3.31	3.65	3.41	3.56	3.26	2.68		3.60																														8
																																							9
																																							10
																																							12
3.08	2.95	3.76		3.06	3.86		3.56		3.20	2.91																													15
		4.15	3.13		2.84	3.48	3.62																																16
			3.66	2.79			2.49		3.30	3.36	3.20																												18
				4.04	3.51	3.38	3.45		3.01	3.23	2.83																												20
																																							22
																																							26
																																							6 Mar.
						3.80	2.98		2.73	3.52	3.48	2.13	4.11																										7
									3.47	3.53	3.12	3.27	3.86																										8
																																							9
																																							17
																																							18
																																							23
																																							24
																																							28
																																							29
												3.59	3.31				3.49	4.52	3.50																				1 Apr.
												3.23	4.06			3.42	3.67	2.68	2.73	3.40																		2
																																							3
																																							4
												4.24	3.01	4.26	3.69	2.93	3.77	3.13	3.06	3.31																		5
												3.49	3.66		3.72		3.59																					7
														3.49	3.30	3.37																						10
														3.84	3.36	3.32	3.59	3.80	3.89	4.11	4.43	4.43																11
														3.92	3.71	3.62	3.38	3.51	3.66	3.25	3.68	3.27																12
																																							16
																																							18
																																							21
																																							25
																		4.10	3.51	3.81																		28
																																							30
																				3.21																		2 May
																					3.42	2.91			2.53	3.44 4.05												5
																																							8
																					3.48	3.43	4.16	3.78	3.60	3.56												11
																																							12
																					2.80	3.21	3.55	3.37	3.84	3.69	3.71											15
																																							16

Daily Mean of Latitude.

		P.M.	No.	A.M.	No.			P.M.	No.	A.M.	No.			P.M.	No.	A.M.	No.
		″						″						″			
1889 Dec.	1	3.05	17			1890 April	11	3.79	5	3.86	9	1890 Aug.	9	2.94	7		
	2	3.20	4				12	3.54	8	3.56	9		10			3.42	6
	4	3.32	9				16	3.93	7				14	3.21	3	3.13	12
	6	2.85	16				18	3.89	8	3.81	3		15	3.32	8		
	7	2.98	16	3.25	7		21	3.83	6				20	3.30	6		
	9	2.92	10	3.23	7		25	3.31	3				23	2.95	8	2.98	11
	11	2.87	19	2.96	9		28	3.66	6	3.32	2		24	3.42	6		
	13			3.28	6		30	3.41	5	3.23	4		27	3.08	5	3.26	9
	23			3.08	6	May	2	3.86	3				30	3.18	6	3.15	11
	26			3.40	11		5	3.44	6				31			3.17	13
	27	3.12	5	2.56	1		8	3.34	4	3.67	6	Sept.	1	3.49	8	3.13	7
	28	3.32	7				11	3.86	5				2			3.39	9
1890 Jan.	14	3.09	4				12	3.73	6				7	3.26	6		
	17	3.11	5				15			3.45	7		18	3.46	11	3.14	8
	18			3.21	12		16	3.63	5				19	3.10	11		
	24			3.10	2		17			3.64	9		21			3.67	5
	27			3.16	9		20			3.50	2		22			3.30	9
	28	3.50	5	3.21	9		21	3.72	5				23	2.68	5	2.99	11
Feb.	5	3.23	12				22	3.52	7	3.16	7		25	3.27	8		
	6	3.49	11	3.27	12		27			3.43	7		28	3.37	10	3.07	10
	8			3.30	12		28			3.46	6		29	3.10	10		
	9	3.43	6				31	3.30	5			Oct.	4			3.09	13
	10	3.35	14			June	1	3.46	7				8	3.34	10	3.28	10
	12	3.38	15				3	3.40	7				14	2.82	9	3.01	14
	15			3.30	9		8	3.64	8				15	2.99	11		
	16			3.44	5		14			3.48	4		17			3.30	11
	18			3.13	6		15			3.32	9		21	3.06	10	3.13	11
	20			3.35	7		18			3.54	7		30			3.16	12
	22	3.47	6				19	3.28	6	3.57	6		31	3.12	10	3.14	9
	26	3.19	8				20	3.50	6			Nov.	1	3.10	13		
Mar.	6	3.54	8				25	3.59	12	3.51	9		4			3.19	13
	7	3.50	8				26	3.32	10	3.38	7		5			3.20	16
	8	3.64	10	3.25	7		27	3.36	6				13	3.00	15	3.09	12
	9			3.45	5		29	3.13	12	3.54	8		14	2.95	16		
	17	3.38	2				30	3.12	10	3.84	6		21	3.19	17		
	18	3.35	8			July	5	3.67	12	3.63	7		22	3.12	19	3.09	4
	23	3.34	3				6	3.49	4	3.36	7		24	2.91	17		
	24	3.55	2				18	3.22	4	3.48	9		25			3.13	1
	28	3.54	4				19	3.56	8	3.45	2		27			3.32	6
	29	3.12	8				20	3.79	8	3.41	11		28	3.07	15	2.94	3
April	1	3.68	6	3.68	5		21			3.42	9		29	2.90	15		
	2	3.61	7	3.31	7		22	3.05	8	3.53	8		30	3.04	11		
	3	3.64	3				30	3.08	3			Dec.	3			3.32	5
	4	3.53	4				31	3.07	7	2.86	1		10			2.65	4
	5	3.54	11	3.49	9	Aug.	3	3.44	5				12	2.86	6	3.15	7
	7	3.39	3	3.62	4		6	3.46	7	3.30	9		13	2.79	6	3.21	5
	10	3.60	4	3.39	3												

Final Values of Latitude.

Weighted Mean Date.			φ P.M.	No.	φ A.M.	No.	Mean.	A.M.-P.M.
1889	December	11	″3.015	103	″3.194	47	″3.104	+″.179
1890	February	4	3.345	72	3.231	56	3.288	— .114
	March	1	3.451	50	3.312	39	3.382	— .139
	April	4	3.518	60	3.578	37	3.548	+ .060
	April	23	3.651	56	3.541	24	3.596	— .110
	May	22	3.566	47	3.442	38	3.504	— .124
	June	26	3.408	86	3.507	70	3.458	+ .099
	July	26	3.312	57	3.415	55	3.364	+ .103
	August	25	3.250	50	3.168	72	3.209	— .082
	September	22	3.213	61	3.183	43	3.198	— .030
	October	19	3.074	63	3.151	80	3.112	+ .077
	November	16	3.036	84	3.158	46	3.097	+ .122
	December	3	2.959	53	3.137	30	3.048	+ .178
				842		637		

The probable error of a single determination computed from the daily mean of all, and therefore including that part due to the declinations employed, is found to be as follows:

Evening observations	0.″222
Morning observations	0.246

The Constant of Aberration.

As each pair of stars, with two exceptions, was observed both evening and morning, when the effect of aberration was not far from its maximum value, this series is well adapted to an investigation of that constant, if by any means the effect of the latitude variation can be eliminated. In fact this formed a part of the original plan in arranging the scheme of observation.

Unfortunately, however, in a series like this, the effect of aberration cannot be separated from the latitude variation without some assumption with regard to one or the other. In the present case it has been assumed that the latter can be represented by a single periodic function, the period being fourteen months. Each observation will then give an equation of the form

$$\phi_0 + \Delta + Ax + By + C\rho + T\mu = \phi$$

Where ϕ_0 is an assumed latitude,
Δ a constant correction,
$Ax + By$ the periodic terms,
$C\rho$ the correction on account of error in Struve's aberration constant,
$T\mu$ uniformly progressive change in the latitude.

For full details as to the process of combining and solving these equations, reference may be had to the series of 1892–93.

The resulting correction to Struve's value of the constant of aberration, which is the only term we are now concerned with, is

	+ ″.0027 ± 0140
Struve's value	20″.4451
Final result	20″.448 ± 014

It is no doubt an open question whether this value is entitled to very great confidence as a determination of the aberration constant. If the series had been continued for three months longer, so as to embrace an entire period of fourteen months, or if it had happened to be arranged symmetrically with respect to a maximum and minimum value of the latitude, its weight would no doubt have been very materially increased.

As neither of these conditions have been met, it appears quite doubtful whether the method pursued has been entirely successful in eliminating the latitude variation.

At all events it has not been thought advisable to introduce any correction on account of aberration. The foregoing results therefore, as to latitude, depend upon Struve's value of this constant.

THIRD SERIES.

October 10, 1892, to December 27, 1893.

Before beginning this series some changes were made in the building and instrument, the most important being the following:

The width of the observing slit was increased from 20 to 36 inches. It was hoped that this might reduce the liability to disturbance in the way of irregular refraction. The instrument was fitted with two latitude levels to replace the single one before used. The latter had deteriorated to such an extent as to be worthless for refined determination of latitude. The new levels were furnished by G. Saegmüller, of Washington, and proved superior to any heretofore employed.

The Level Values.

The method of determining these, with an example illustrating the process, will be found in the publication of results for 1894, '95.* That series being a continuation of this one, no change in this particular occurred.

Six different determinations were made as follows. The upper level is called A, the lower B:

1892	September 30–October 1	A 1.″335	B 1.″006	Thermom.	62°
	December 29–December 31	1.395	1.058		24
1893	March 30–March 31	1.370	1.024		44
	June 25–June 26	1.175	0.995		67
	October 4–October 12	1.307	1.044		59
1894	January 7–January 8	1.273	1.037		36

The values employed are as follows:

1892	October	–1893	February	A 1.365	B 1.032
1893	March	–	June	1.272	1.010
	July	–	October	1.238	1.020
	November	–	December	1.286	1.040

In observing care was taken to keep the level correction small, in order to minimize the effect of any uncertainty as to the true value.

* Vol. xx, TRANSACTIONS OF THE AMERICAN PHILOSOPHICAL SOCIETY, Article iii.

The Micrometer.

The description of the micrometer and reticle found in the publication of results for 1894, '95, before referred to, applies equally to the present series. The methods of observing and of determining the intervals of the micrometer threads being the same in both series.

At various times transits of circumpolar stars near elongation were observed for the purpose of determining the screw value. Of these 51 Cephei and δ Ursæ Minoris were each observed at five elongations; 43 Cephei at twenty, and Groombridge 750 at fifteen elongations respectively. In comparing the results it became obvious that the effect of constant use in wearing the screw was manifest, and that the value should be treated as a variable quantity.

The method of procedure adopted, as seeming least objectionable, was to derive the screw value from the latitude observations, as will be explained presently.

The above-mentioned transits of circumpolar stars were employed for investigating the progressive errors, which were increasing with the increased wearing of the screw.

Let n be the number of revolutions of the screw reckoned from the middle of the scale—the middle in this case is revolution 20.

R the mean value of one revolution.

The errors being supposed uniformly progressive, the space s corresponding to n will have the form

$$S = Rn + \rho n^2$$

For a second reading

$$S' = Rn' + \rho n'^2$$
$$S - S' = R(n - n') + \rho(n^2 - n'^2)$$

The transits are observed from 33 to 7. The observed times are corrected for change of level and curvature of the stars' path. They are then combined by subtracting 33 from 19, 32 from 18, ... 21 from 7, thus obtaining a series of values for the time required for the star to pass over a space equal to fourteen revolutions of the screw. If no progressive or other errors were present these times should be equal. The difference between any individual value and the mean of all is taken as the correction due to the progressive error expressed in seconds of time. This must then be reduced to the equivalent in screw revolutions.

In the following tabular statement is found the mean values of these differences, those for 51 Cephei being reduced to the scale of δ Ursæ Minoris and those for 43 Cephei to Groombridge 750.

	Micrometer	$n^2 - n'^2$	*Observed dif.*	v_{c-o}	
			s		
1	19 — 33	— 168	— 3.64	+ .53	
2	18 — 32	— 140	— 2.29	— .30	
3	17 — 31	— 112	— 2.23	+ .16	
4	16 — 30	— 84	— 1.04	— .51	51 Cephei and
5	15 — 29	— 56	— 1.24	+ .20	δ Ursæ Minoris.
6	14 — 28	— 28	— .67	+ .15	
7	13 — 27	— 0	+ .36	— .36	
8	12 — 26	+ 28	+ .88	— .36	
9	11 — 25	+ 56	+ .94	+ .10	
10	10 — 24	+ 84	+ 1.82	— .27	
11	9 — 23	+ 112	+ 2.29	— .22	
12	8 — 22	+ 140	+ 2.41	+ .18	
13	7 — 21	+ 168	+ 2.36	+ .75	
1	19 — 33	— 168	— 1.70	— .13	
2	17 — 31	— 112	— 1.34	+ .12	
3	15 — 29	— 56	— .71	+ .10	43 Cephei and
4	13 — 27	— 0	+ .20	— .20	Groombridge 750.
5	11 — 25	+ 56	+ .51	+ .10	
6	9 — 23	+ 112	+ 1.22	— .00	
7	7 — 21	+ 168	+ 1.82	+ .01	

The "observed difference" is the observed value of $\rho\ (n^2 - n'^2)$.

The time required for 51 Cephei to pass over a space equal to one revolution is $57^s.06$.

That for 750 Groombridge $40^s.92$. Therefore,

From 51 Cephei and δ Ursæ Minoris $\rho = + {}^s.01855 = + .000325\ R$

43 Cephei and 750 Groombridge $+ .01086 = + .000265\ R$

Mean $+ .000295\ R$

Which is the value employed in this series.

The corresponding corrections in terms of screw revolutions follow:

7 and	33	+.0499
8	32	.0425
9	31	.0357
10	30	.0295
11	29	.0239
12	28	.0189
13	27	.0145
14	26	.0106
15	25	.0074
16	24	.0047
17	23	.0027
18	22	.0012
19	21	.0003

A preliminary reduction of the latitude observations is now carried out, applying

these corrections to the micrometer readings and using an approximate value of the screw. The temperature coefficient deduced from the 1889, '90 series has been used. This was derived before the complication due to wearing of the screw had become noticeable and seemed reliable. The value assumed is as follows:

$$R = 50''.5194 - .000367\,[T - 45^\circ]$$

T being the thermometer reading.

Each latitude determination now gives an equation of the form

$$\sqrt{p}\,[\Delta\phi - (M - M')\,\Delta\tfrac{1}{2}R = n]$$

Where $\Delta\phi$ and ΔR are the corrections to the assumed latitude and micrometer values respectively. An example illustrating this process may be found in the published results for 1894, '95, before referred to.

Sixteen series of equations were formed for determining the values of $\Delta\phi$ and $\Delta\frac{1}{2}R$, the time embraced by each series therefore averages something less than a month.

The results for $\Delta\frac{1}{2}R$ follow. No use was made of $\Delta\phi$:

					$\Delta\frac{1}{2}R$	*Adjusted* $\Delta\frac{1}{2}R$	*o–o*
1	1892	October	10–October	24	— .0111	— .0088	+ 23
2		October	30–November	26	— .0090	— .0056	+ 34
3		December	1–December	23	+ .0029	— .0024	— 53
4		December	26–January	20	+ .0017	+ .0009	— 08
5	1893	January	21–February	16	— .0001	+ .0041	+ 42
6		February	20–March	18	+ .0100	+ .0073	— 27
7		March	18–April	4	+ .0131	+ .0106	— 25
8		April	16–May	7	+ .0124	+ .0138	+ 14
9		May	8–June	8	+ .0209	+ .0170	— 39
10		June	8–June	30	+ .0216	+ .0203	— 13
11		July	2–July	23	+ .0205	+ .0242	+ 37
12		July	27–August	10	+ .0244	+ .0288	+ 44
13		September	2–September	23	+ .0336	+ .0337	+ 01
14		September	27–October	24	+ .0366	+ .0381	+ 15
15		October	25–November	30	+ .0461	+ .0425	— 36
16		December	4–December	27	+ .0484	+ .0470	— 14

The adjustment was graphic and, as will be seen, the increase in $\Delta\frac{1}{2}R$ differs but little from the linear form.

The micrometer frame carried five threads numbered consecutively. The respective distances were made as nearly as possible equal to ten revolutions of the screw. In observing a latitude pair the bisection was made with thread III, unless the difference of

zenith distance was as great as twenty revolutions. In such cases threads II and IV were used to avoid the large number of turns of the screw.

The distance between II and IV was therefore required with accuracy and was determined at frequent intervals. Below will be found the amount to be added to the micrometer correction required on account of the amount by which II–IV differed from twenty revolutions. The progressive diminution is evidently due mainly to the increased value of R from wearing:

1892	October	10	+ 1.54	1893	February	24	+ 0.83
	October	14–November 17	+ 1.25		"	25	+ 0.82
	November	20	+ 1.20		February	26–July 21	+ 0.81
	"	22	+ 1.16		July	23	+ 0.77
	"	26	+ 1.11		"	27–August 10	+ 0.74
	December	1–December 11	+ 1.05		September	2–September 22	+ 0.55
	"	2	+ 1.01		"	23	+ 0.48
	"	12	+ 0.97		"	27–October 24	+ 0.42
	"	15	+ 0.94		October	25	+ 0.36
	"	17	+ 0.90		"	28	+ 0.31
	December	18–February 15	+ 0.86		October	29–November 16	+ 0.25
1893	February	16	+ 0.85		November	26	+ 0.16
	"	20	+ 0.84		"	28–December 25	+ 0.06

The Star List.

The list of stars found in the following pages shows the values of the coordinates for 1892, '93 actually employed in the latitude reduction. The Right Ascensions differ slightly from the definitive values, but this is of no importance for present purposes. The last column, headed "correction for curvature," is the only one which appears to call for explanation. This is the sum of the values of the quantity

$$\tfrac{1}{4}\,(15\ \mathrm{T})^2 \sin 1'' \tan \delta$$

Computed for each star of the pair, T being the interval from the time of bisection to the time of passing the meridian.

The reduction to apparent place was made by the formula

$$\tfrac{1}{2}\,(\delta + \delta') = \tfrac{1}{2}\,(\delta_0 + \delta'_0) + \tfrac{1}{2}\,(\mu' + \mu_1')\,\tau + \tfrac{1}{2}\,(a' + a_1')\,A + \tfrac{1}{2}\,(b' + b_1')\,B + \tfrac{1}{2}\,(c' + c_1')\,C + \tfrac{1}{2}\,(d' + d_1')\,D$$

A, B, C and D being taken from the American Ephemeris.

Group	No.	B.A.C.	α1892	α1893	δ1892	δ1893	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	6599	19 12 37.11	39.19	37 56 29.82	36.09	+.0140	+.06
		6656	19 20 31.77	33.66	43 10 39.27	46.13	−.0362	
	2	6697	19 26 58.91	60.43	51 29 59.15	66.71	+.1250	+.06
		6740	19 35 6.55	8.92	29 54 16.46	24.59	+.0468	
	3	6784	19 42 19.52	21.80	33 28 35.54	43.76	−.4397	+.06
		6830	19 48 56.15	57.91	47 39 11.19	20.36	−.0070	
	4	6876	19 55 56.84	58.72	45 28 39.28	48.98	−.0197	+.06
		6915	20 2 20.99	23.21	35 40 30.41	40.19	−.4269	
	5	6962	20 9 54.36	56.24	46 29 20.22	30.97	−.0141	+.06
I		6998	20 14 30.25	32.55	34 38 43.57	54.69	+.0108	
	6	7037	20 19 37.34	37.64	68 32 5.31	16.82	+.0330	+.09
		7094	20 28 50.50	53.33	12 39 26.94	39.10	+.0388	
	7	7140	20 33 41.82	44.50	20 49 20.54	33.01	+.0112	+.07
		7176	20 38 0 22	1.50	60 6 52.81	65.73	+.1673	
	8	7213	20 43 12.08	14.42	36 5 38.18	51.29	+.0026	+.06
		7254	20 49 32.09	34.19	44 46 21.49	35.00	−.0053	
	9	7297	20 55 47.26	49.53	39 49 52.35	66.47	+.2072	+.06
		7326	20 59 49.46	51.70	41 12 4.03	18.15	−.0476	
	10	7380	21 10 25.51	28 51	4 48 5.56	20.29	−.0764	+.13
		7438	21 16 52.56	52.00	76 33 26.80	41.99	+.0105	
	1	7509	21 28 55.90	55.70	75 55 43.89	59.74	−.0107	+.13
		7522	21 33 7.28	10.29	5 17 4.32	20.42	+.0308	
	2	7561	21 38 52.92	55.86	9 22 47.99	64.37	+.0093	+.10
		7597	21 41 44.91	45.66	71 49 30.18	46.65	−.0433	
	3	BD59.2444	21 55 55.16	57.05	59 46 48.32	65.51	+.0044	+.07
		7712	22 2 46.01	48.83	21 10 38.09	55.51	−.0655	
	4	7760	22 8 10.99	12.38	69 35 56.13	73.85	+.0075	+.10
		7796	22 16 12.09	15.04	11 39 40.03	58.08	+.0166	
II	5	7820	22 20 8.05	10.47	48 55 43.77	61.94	−.0133	+.06
		7843	22 25 5.39	8.13	32 1 11.56	29.91	−.0058	
	6	7915	22 36 38.55	41.23	39 39 40.80	59.54	−.0029	+.05
		7932	22 39 16.47	19.14	41 15 9.05	27.88	+.0148	
	7	7962	22 45 29.46	32.16	41 22 53.38	72.37	−.0061	+.05
		7978	22 48 15.14	17.88	39 35 36.42	55.48	−.0121	
	8	8024	22 56 56.72	59.25	56 31 31.05	50.34	−.0064	+.07
		8052	23 1 51.11	54.03	24 53 7.44	26.82	−.0279	
	9	8078	23 6 17.05	20.09	8 8 1.20	20.71	+.0139	+.12
		8122	23 13 59.14	61.32	73 5 55.02	74.64	−.0321	

Group	No.	B.A.C.	α1892	α1893	δ1892	δ1893	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	8195	23 25 58.63	61.57	38 38 34.70	54.46	—.0731	+.06
		8229	23 32 50.27	53.20	42 40 12.61	32.53	+.0026	
	2	8252	23 37 49.95	52.85	52 33 12.23	32.18	—.0042	+.07
		8284	23 44 11.40	14.43	28 14 28.17	48.20	+.0194	
	3	8317	23 50 8.99	11.97	56 48 39.88	59.91	—.0108	+.07
		8324	23 52 15.33	18.38	24 32 27.64	47.65	—.0258	
	4	16	0 4 42.50	45.60	45 28 16.31	36.35	—.0054	+.06
		LL 220	0 11 5.32	8.44	35 53 22.91	42.98	+.0501	
III	5	99	0 22 21.14	24.25	18 55 0.51	20.46	—.0090	+.07
		126	0 26 51.69	55.06	62 20 8.36	28.27	—.0050	
	6	194	0 38 30.94	34.80	74 23 51.48	71.22	—.0307	+.13
		222	0 43 4.70	7.81	6 59 49.90	69.57	—.0349	
	7	259	0 50 45.48	48.79	37 54 48.37	67.97	+.0380	+.06
		318	1 1 48.74	52.11	43 21 59.45	78.72	—.0602	
	8	394	1 13 52.52	56.47	64 5 29.61	48.60	—.0293	+.08
		413	1 18 2.58	5.79	17 15 19.22	38.09	—.0307	
	9	438	1 23 11.69	16.07	69 42 30.97	49.64	—.0748	+.10
		459	1 26 49.53	52.70	11 19 36.81	55.45	+.0061	
	10	480	1 30 27.54	31.04	40 51 54.15	72.29	—.3709	+.05
		502	1 34 12.29	15.81	40 1 47.50	65.86	—.0217	
	1	592	1 51 26.96	30.23	17 17 24.20	41.91	—.0171	+.08
		611	1 55 0.62	4.97	63 52 5.06	22.64	+.0010	
	2	656	2 3 7.04	10.60	34 28 34.28	51.47	—.0355	+.06
		706	2 12 18.73	22.58	46 52 52.50	69.28	—.0143	
	3	744	2 20 9.88	14.74	66 54 59.22	75.64	+.0074	+.09
		780	2 26 59.28	62.58	14 33 21.82	37.92	+.0402	
	4	816	2 35 19.25	23.51	54 38 40.29	55.88	—.0286	+.06
		872	2 43 37.57	41.06	26 48 54.19	69.24	—.1028	
IV	5	916	2 52 41.97	45.84	40 36 7.48	22.06	—.0405	+.05
		963	3 1 8.46	12.35	40 32 20.98	35.09	+.0045	
	6	981	3 4 19.01	22.86	39 12 3.23	17.15	+.0083	+.06
		993	3 7 46.58	50.54	42 5 59.41	73.12	+.0164	
	7	1050	3 19 7.72	13.83	71 29 12.68	25.63	+.0046	+.10
		1068	3 21 18.96	22.21	9 21 20.54	33.31	—.0366	
	8	1119	3 33 19.21	22.60	16 11 5.84	17.78	—.0304	+.08
		1144	3 39 38.08	43.51	65 11 28.97	40.48	—.0130	
	9	1221	3 50 29.11	32.65	22 9 59.06	69.69	—.1052	+.07
		1237	3 55 27.20	32.17	58 51 17.12	27.49	—.0006	
	10	1274	4 2 52.42	55.89	19 19 23.33	33.10	—.0342	+.07
		1286	4 7 22.56	27.81	61 34 40.44	49.89	—.0136	

Group	No.	B.A.C.	α1892	α1893	δ1892	δ1893	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	1307	4 11 6.79	11.28	49 47 5.09	14.19	—.0623	+.06
		1364	4 19 13.64	17.44	31 11 40.53	48.95	—.1161	
	2	1425	4 31 24.38	29.08	52 51 49.02	56.56	—.0166	+.06
		1444	4 34 34.07	37.82	28 24 18.46	25.73	—.0298	
	3	1486	4 43 58.61	61.86	6 46 20.17	26.73	+.0345	+.13
		1496	4 48 38.09	45.64	74 6 3.77	9.94	+.0298	
	4	1536	4 53 48.72	54.04	60 17 0.84	6.53	—.0140	+.07
		1555	4 57 55.41	58.98	21 7 33.24	38.61	—.0156	
V	5	1583	5 3 28.20	33.76	62 33 25.88	30.78	+.0079	+.08
		1625	5 10 25.17	28.68	18 19 6.68	10.98	—.0040	
	6	1687	5 19 20.25	23.47	6 15 4.80	8.33	—.0079	+.13
		1706	5 25 17.56	25.56	74 58 15.89	18.92	+.0124	
	7	1751	5 31 36.98	43.00	65 38 16.94	19.38	—.0337	+.08
		1821	5 40 32.85	36.30	15 46 46.91	48.61	+.0011	
	8	1862	5 46 14.17	17.58	14 8 37.52	38.72	+.0018	+.07
		1874	5 49 36.39	42.61	67 0 8.42	9.28	—.0457	
	9	1923	5 55 30.73	35.07	42 54 50.85	51.09	—.1487	+.06
		1942	5 59 8.43	12.56	38 29 30.37	30.40	—.0420	
	10	1970	6 3 1.66	5 28	22 12 24.54	24.28	+.0008	+.07
		2007	6 10 5.68	10.98	59 2 57.07	56.21	+.0271	
	1	2045	6 17 23.08	28.32	58 28 31.30	29.77	—.0072	+.07
		2101	6 23 50.59	54.22	22 36 58.11	56.03	+.0021	
	2	2139	6 29 7.32	11.45	38 31 55.12	52.55	—.0215	+.06
		2159	6 31 37.08	41.37	42 34 59.54	56.72	—.0594	
	3	2187	6 36 41.49	46.80	59 32 60.42	57.21	—.0037	+.07
		2233	6 45 4.71	8.31	21 53 16.82	12.87	—.0298	
	4	2301	6 56 38.42	42.23	29 30 63.76	58.04	—.8112	+.06
		2341	7 4 58.07	62.77	51 36 25.36	19.75	+.0048	
	5	2365	7 9 16.43	21.63	59 6 33.96	27.96	—.0243	+.07
		2410	7 13 40.40	43.98	22 10 50.49	44.15	—.0056	
VI	6	2429	7 19 38.58	44.88	68 41 7.27	0.39	—.0479	+.09
		2473	7 23 47.11	50.45	12 13 45.77	38.58	—.0099	
	7	2488	7 28 41.21	45.58	46 25 4.24	56.67	—.0091	+.06
		2509	7 32 6.98	10.91	34 49 52.83	44.85	—.1296	
	8	2551	7 37 55.68	59.30	24 39 23.26	14.89	—.0515	+.07
		2616	7 47 41.48	46.38	56 47 15.51	6.40	—.0231	
	9	2676	7 57 27.90	31.44	22 22 22.99	13.15	+.0018	+.07
		2704	8 1 12.06	17.02	58 33 49.44	39.24	—.0786	
	10	2786	8 13 30.36	34.02	27 33 61.13	49.72	—.3769	+.06
		2792	8 15 37.89	42.44	53 33 61.09	49.80	—.0999	
	11	2819	8 21 17.52	22.55	61 4 43.03	31.32	—.1155	+.07
		2880	8 29 6.95	10.40	17 57 40.05	27.90	—.0000	
	12	2953	8 38 32.92	36.32	18 32 63.20	50.17	—.2303	+.07
		2982	8 44 28.52	33.52	62 21 56.76	43.59	+.0237	

Group	No.	B.A.C.	α1892	α1893	δ1892	δ1893	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	3003	8 47 21.66	26.87	65 0 59.45	45.98	—.0886	+.08
		3052	8 51 33.31	36.66	15 59 44.39	30.78	+.0371	
	2	3083	8 57 42.81	47.06	51 14 73.52	59.40	—.0793	+.06
		3109	9 1 31.02	34.64	30 5 17.00	2.73	+.0062	
	3	3140	9 8 24.95	29.30	54 27 63.03	48.40	+.0646	+.06
		3170	9 12 56.43	59.95	26 42 23.87	8.90	—.0167	
	4	3228	9 22 44.10	47.29	8 39 33.31	17.79	—.0093	+.11
		3231	9 24 41.72	47.49	72 40 64.52	48.82	—.0743	
VII	5	3281	9 31 37.20	40.96	40 43 27.75	11.76	+.0113	+.05
		3307	9 35 18.87	22.60	40 14 59.27	43.04	—.0402	
	6	3375	9 47 10.62	14.21	35 29 31.01	14.23	—.0030	+.06
		3397	9 51 8.04	11.85	45 55 42.80	25.79	—.0440	
	7	3468	10 4 48.70	52.27	37 55 61.21	43.60	—.0340	+.06
		3505	10 10 34.96	38.60	43 26 72.44	54.59	—.0372	
	8	3530	10 15 45.41	48.99	41 46 38.74	20.58	—.1403	+.05
		3584	10 23 48.23	51.75	39 28 39.79	21.48	+.0024	
	9	3647	10 34 34.61	38.76	66 16 55.04	36.29	—.0752	+.09
		3693	10 40 42.05	45.24	14 45 53.32	34.40	—.0516	
	10	3725	10 47 2.00	5.66	55 9 32.62	13.57	—.0186	+.06
		3751	10 50 42.75	46.01	26 4 36.19	17.04	—.0090	
	1	3787	10 59 29.74	32.94	25 46 70.21	50.79	—.0596	+.06
		3825	11 6 27.39	30.92	55 28 51.77	32.25	—.0097	
	2	3877	11 18 17.62	20.75	11 7 26.63	6.83	—.0734	+.10
		3914	11 24 59.24	62.86	69 55 37.48	17.64	—.0239	
	3	3949	11 32 2.45	5.73	51 12 59.99	40.05	—.0348	+.06
		LL 22186	11 38 28.65	31.79	30 10 46.23	26.29	+.0166	
	4	4010	11 46 45.40	48.88	38 29 36.80	11.01	—5.7721	+.05
		W.B. 956	11 50 47.81	50.93	42 36 52.84	32.79	—.0091	
VIII	5	4074	12 0 12.31	15.38	63 31 71.28	51.15	—.0818	+.08
		4099	12 5 1.35	4.41	17 24 37.09	17.05	+.0070	
	6	4123	12 10 4.89	7.88	57 37 57.70	37.67	+.0024	+.07
		4141	12 13 51.93	54.97	23 37 64.65	44.63	—.0108	
	7	4195	12 21 33.29	36.28	28 51 67.68	47.64	—.0803	+.06
		4217	12 24 56.58	59.44	52 7 53.87	33.94	+.0032	
	8	4239	12 28 52.41	55.00	70 22 60.87	40.98	+.0069	+.10
		4271	12 36 25.13	28.16	10 49 50.92	31.02	—.0969	
	9	4300	12 42 42.11	44.69	63 21 74.17	54.45	—.0102	+.08
		4318	12 46 50.06	53.04	17 39 41.16	21.52	—.0043	
	10	4371	12 57 34.17	36.56	64 11 25.35	5.94	+.0109	+.08
		4403	13 4 29.33	32.28	17 25 29.05	9.79	+.0011	
	11	4433	13 8 49.16	51.89	40 43 29.10	9.96	+.0093	+.05
		4467	13 15 28.61	31.30	40 42 63.06	44.07	—.0135	

Group	No.	B.A.C.	α1892	α1893	δ1892	δ1893	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	4510	13 24 29.23	31.44	60 29 72.98	54.30	+ .0240	+ .07
		4562	13 35 30.91	33.77	20 29 67.51	49.20	+ .0277	
	2	4694	14 1 38.79	41.44	31 21 57.84	40.45	— .0994	+ .06
		4701	14 4 15.20	17.45	49 57 66.69	49.57	+ .0504	
	3	4728	14 10 2.28	4.71	42 1 33.37	16.36	— .1011	+ .06
		4758	14 15 21.60	24.07	39 17 25.80	9.15	— .0024	
IX	4	4825	14 30 13.64	16.10	37 5 61.91	45.96	— .0536	+ .06
		4841	14 34 9.18	11.44	44 6 29.04	13.39	+ .0293	
	5	4874	14 39 21.71	23.20	61 43 20.20	4.77	— .0323	+ .07
		4905	14 46 24.51	27.26	19 32 57.37	42.29	— .0803	
	6	4926	14 51 7.40	10.23	14 52 58.86	44.14	— .0009	+ .09
		4949	14 55 52.14	53.09	66 21 45.20	30.79	+ .0170	
	7	4974	15 0 13.80	15.78	48 4 30.32	16.19	+ .0361	+ .06
		5000	15 6 16.30	18.72	33 29 17.10	3.32	— .0023	
	1	5072	15 17 29.11	31.51	33 19 13.36	0.31	+ .0104	+ .06
		5113	15 25 57.02	58.93	48 4 63.10	50.61	— .0050	
	2	5147	15 29 24.74	25.57	64 34 19.26	7.10	+ .0806	+ .08
		5180	15 36 1.11	3.86	16 22 23.64	11.85	— .0093	
	3	5210	15 39 54.69	56.34	52 41 66.78	55.31	+ .0352	+ .06
		5236	15 44 7.40	9.87	28 29 17.86	6.65	+ .0011	
	4	5271	15 48 56.38	58.45	42 45 14.01	3.79	+ .6288	+ .07
		5295	15 51 51.84	54.02	38 15 32.77	22.22	+ .0844	
X	5	BD72.703	15 56 44.08	43.46	72 41 62.83	52.58	+ .0179	+ .11
		5366	16 3 15.61	18.50	8 49 18.19	8.42	— .0015	
	6	5466	16 17 9.33	11.98	19 24 25.18	16.52	+ .0463	+ .07
		5512	16 22 31.87	32.68	61 45 31.30	23.08	+ .0554	
	7	5568	16 33 2.08	3.83	46 49 55.35	47.93	+ .0082	+ .06
		5619	16 39 52.82	55.04	34 14 17.25	10.46	+ .0709	
	8	5658	16 44 38.54	39.78	55 35 64.75	58.27	— .0066	+ .06
		5703	16 50 36.89	39.35	25 54 18.03	12.04	— .0109	
	9	5752	16 57 22.74	23.84	56 50 49.64	44.26	+ .0306	+ .07
		5786	17 4 5.61	8.08	24 37 39.16	34.28	— .0421	
	10	5842	17 13 20.06	22.27	33 12 59.99	55.94	+ .0035	+ .06
		5911	17 23 52.40	53.99	48 20 62.87	59.71	— .0149	

Group	No.	B.A.C.	$\alpha 1892$	$\alpha 1893$	$\delta 1892$	$\delta 1893$	μ'	Cor. for Curvature
			h m s	s	° ′ ″	″	″	″
	1	5941	17 29 55.26	58.05	12 38 20.16	17.31	— .2256	+ .10
		6006	17 37 35.10	34.74	68 48 28.08	26.44	+ .3151	
	2	6122	17 57 3.41	2.37	72 0 54.91	54.64	— .0078	+ .11
		6143	18 2 13.74	16.58	9 32 55.88	56.18	+ .0969	
	3	6193	18 9 28.61	30.61	38 44 36.44	37.28	+ .0043	+ .06
		6203	18 12 17.07	18.92	42 7 21.62	22.70	+ .0024	
XI	4	6232	18 15 42.19	44.51	29 37 10.65	12.03	+ .0102	+ .06
		6258	18 18 57.06	58.47	51 14 55.90	57.54	— .0122	
	5	6300	18 25 7.06	9.55	23 47 40.74	42.95	+ .0137	+ .07
		6348	18 30 42.63	43.66	56 57 46.84	49.51	— .0137	
	6	6373	18 37 5.70	6.42	60 36 38.58	41.86	+ .0451	+ .07
		6387	18 41 0.90	3.48	20 26 35.68	38.91	— .3341	
	7	6476	18 51 56.27	57.85	48 43 27.97	32.35	— .1240	+ .06
		6491	18 54 54.24	56.48	82 32 29.85	34.61	+ .0029	
	8	6534	19 0 50.89	53.17	31 34 59.88	65.07	— .0706	+ .06
		6579	19 9 17.51	19.08	49 39 8.10	14.69	+ .6214	

The Latitude Observations.

The details of the latitude determination are given in the pages following. The expression for the latitude is as follows:

$$\phi = \tfrac{1}{2}(\delta + \delta') + \tfrac{1}{2}R(M - M') + \tfrac{1}{4}d[(n - n') - (s' - s)] + (m + m') + \tfrac{1}{2}(r - r')$$

M and M' are the micrometer readings.

n, s, n', s', the readings of the north and south ends of the levels for the two stars.

m and m', the correction for curvature.

r and r', the corrections for refraction.

The columns which seem to call for explanation are as follows:

Column P gives the position of the instrument.

D, Direct. The telescope east when pointed south of the zenith.

R, Reverse. The telescope west when pointed south of the zenith.

C, The correction on account of progressive errors of the screw.

Levels A and B, the value of $(n-n') - (s'-s)$ for each level.

Columnn δ gives the sum of the corrections for $\Delta\frac{1}{2}R$ given on page 322 with that for curvature found in the last column of the star list.

In case of those pairs observed with threads II and IV the correction given on page 323 is included.

Column Δ gives the reduction on account of the adopted value of the Constant of Aberration, to be explained later.

Throughout this table the footnote references *a*, *b*, *c* and *d* indicate as follows: *a* = e. e. f.; *b* = definition very poor; *c* = levels discordant; *d* = clouds.

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Oct.															
10	I 4	D	18.4877	22.1190	+ 6	+ .9	— .6	40 34 51.52	+ 1 31.73	+ 3	+ 8	+ 3	40 36 23.39	+9	54.2
	6		20.0707	20.9057	+ 3	— .4	+ .8	40 36 2.20	+ 21.10	+ 8	+ 3	+ 1	23.42	+8	
	8		32.6067iv	8.7467ii	+ 16	+1.1	+ .6	40 26 18.72	+10 2.70	+1.39	+ 26	+17	23.24	+9	53.6
	10		14.7310	25.8190	+ 16	+ .2	+ .3	40 41 2.85	— 4 40.10	+ 23	+ 7	—12	23.93	+7	
	II 1		22.1520	21.4243	+ 9	—1.1	—2.0	40 36 41.56	— 18.40	+ 14	— 45	— 1	22.84	+7	
	V 4	D	29.6377	15.4283	+211	— .4	—1.3	40 42 23.42	— 5 59.47	+ 20	— 24	—11	23.80	—2	41.6
	5		7.5773ii	31.3813iv	— 15	—1.1	—2.7	40 26 22.10	+10 1.26	+1.41	— 54	+20	24.43	—2	
	6		21.6360	22.5233	+ 11	—1.6	—1.2	40 36 45.48	— 22.44	+ 14	— 43	— 1	22.74	—2	
	7		28.0750iv	13.3790ii	+ 63	— .5	— .4	40 42 35.83	— 6 11.39	—1.33	— 13	—13	22.85	—2	
	8		22.2050	18.5667	+ 9	—2.0	—1.0	40 34 26.13	+ 1 57.18	+ 4	— 47	+ 4	22.92	—3	
	9		28.5293	14.6763	+131	+1.7	+2.4	40 42 12.48	— 5 50.27	+ 18	+ 60	—10	22.89	—3	
	10		18.6760	21.8100	+ 5	—1.0	—1.8	40 37 42.44	— 1 19.18	+ 10	— 40	— 3	22.93	—3	
	VI 1		15.4673	24.0997	— 12	—1.1	—2.2	40 32 45.46	+ 3 38.02	— 1	— 47	+ 7	23.07	—3	
	3		26.8063	10.8113	—113	—1.4	—2.8	40 43 8.08	— 6 43.75	+ 21	— 60	—13	23.81	—3	43.0
	4		23.6200	17.2347	+ 15	—1.3	—1.4	40 33 42.31	+ 2 41.33	— 0	— 40	+ 5	23.29	—3	43.0
Oct.	6		8.0673ii	29.3600iv	— 9	—1.2	—1.4	40 27 24.03	+ 8 57.83	+1.44	— 38	+19	23.11	—3	42.1
11	I 1	D	24.4047	18.3080	+ 49	+ .1	— .2	40 33 49.21	+ 2 34.10	+ 1	— 1	+ 4	23.35	+9	60.3
	2		27.3083	13.0777	+ 17	+ .1	— .7	40 42 23.07	— 5 59.47	+ 19	— 7	—10	23.62	+9	
	3		25.4633	20.1743	+ 87	— .7	— .6	40 34 9.34	+ 2 13.80	+ 1	— 19	+ 4	23.00	+9	60.3
	4		18.3310	21.9413	+ 2	+1.3	+1.8	40 34 51.60	+ 1 31.19	+ 3	+ 45	+ 3	23.30	+9	60.3
	5		19.1520	24.0420	+ 44	+1.8	+2.3	40 34 19.43	+ 2 3.62	+ 2	+ 60	+ 3	23.70	+9	
	6		19.6553	20.4610	— 1	— .1	+ .1	40 36 2.29	+ 20.35	+ 8	0	+ 1	22.73	+8	
	7		30.9173iv	12.0160ii	— 9	— .6	—1.4	40 28 24.37	+ 7 57.37	+1.15	— 28	+15	22.76	+8	
	8		32.1103iv	8.2270ii	+ 3	—1.2	—1.0	40 26 18.85	+10 3.23	+1.10	— 33	+17	23.02	+9	58.5
	9		28.4277	16.3310	+168	—1.1	— .2	40 31 17.76	+ 5 5.94	— 5	— 21	+ 8	23.52	+9	
	II 1		21.7453	21.0433	+ 6	—1.8	—2.6	40 36 41.72	— 17.75	+ 14	— 64	— 1	23.46	+7	57.2
	2		19.5307	19.7467	0	+2.1	+2.6	40 36 27.53	— 5.46	+ 10	+ 69	0	22.86	+7	
	3		14.0190	31.4287	+280	— .9	—2.0	40 29 03.56	+ 7 20.42	— 8	— 41	+14	23.63	+8	
	V 5	R	36.2087iv	12.4557ii	+ 95	—1.6	—2.9	40 26 22.13	+10 0.21	+1.12	— 65	+20	23.07	—2	49.0
	6		21.9283	21.0837	+ 7	—3.6	—3.6	40 36 45.54	— 21.38	+ 14	—1.08	— 1	23.21	—2	
	7		14.9223	29.6697	+198	—1.8	—1.0	40 42 35.89	— 6 13.01	+ 21	— 43	—13	22.53	—2	
	8		21.5097	26.1500	+105	—2.7	—1.8	40 34 26.16	+ 1 57.48	+ 4	— 69	+ 4	23.03	—3	
	9		14.2300	28.0500	+ 92	—1.5	—1.8	40 42 12.51	— 5 49.31	+ 18	— 31	—10	22.97	—3	48.9
	10		22.3943	19.2800	+ 16	— .7	—1.0	40 37 42.46	— 1 18.71	+ 10	— 25	— 3	23.57	—3	
	VI 1		26.7120	18.0737	+122	—1.7	—2.2	40 32 45.46	+ 3 38.50	— 1	— 57	+ 7	23.45	—3	
	3		14.4247	30.4120	+228	—2.6	— .6	40 43 8.05	— 6 44.40	+ 21	— 52	—13	23.21	—3	
Oct.	4		17.9813	24.3747	+ 46	— .7	—1.0	40 33 42.26	+ 2 41.61	— 0	— 25	+ 5	23.67	—3	
14	I 2	R	15.1283	29.3763	+190	—1.4	—1.4	40 42 23.05	— 6 0.33	+ 19	— 42	—10	22.39	+9	64.4
	3		19.5710	24.8563	+ 68	+ .5	—1.1	40 34 9.38	+ 2 13.66	+ 1	— 5	+ 4	23.04	+9	
	4		24.0647	20.4537	+ 49	— .5	—1.0	40 34 51.68	+ 1 31.32	+ 3	— 21	+ 3	22.85	+9	63.5
	5		23.8753	18.9813	+ 42	— .1	+ .3	40 34 19.56	+ 2 3.71	+ 2	+ 3	+ 3	23.35	+9	
	6		20.6190	19.7977	+ 1	—1.0	—1.5	40 36 2.46	+ 20.75	+ 8	— 36	+ 1	22.94	+8	62.6
	7		12.6413ii	31.5407iv	— 17	+ .1	— .5	40 28 24.58	+ 7 57.29	+1.15	— 5	+15	23.12	+9	
	8		10.9820ii	34.8677iv	+ 68	— .1	—1.7	40 26 19.11	+10 3.43	+1.10	— 23	+17	23.58	+9	
	9		15.0763	27.1530	+ 80	+ .4	+1.4	40 31 18.06	+ 5 5.22	— 5	+ 25	+ 8	23.56	+9	
	10		28.1250	17.0760	+169	— .4	—1.0	40 41 3.32	— 4 39.48	+ 23	— 20	—12	23.75	+7	61.9
	II 1		23.7493	24.4720	+ 19	—3.2	—3.5	40 36 42.08	— 18.30	+ 14	— 99	— 1	22.92	+7	
	2		22.0410	21.8627	+ 2	—1.3	—1.7	40 36 27.94	— 4.51	+ 10	— 44	0	23.09	+7	
	3		30.8350	13.4327	+219	—2.7	—3.6	40 29 4.05	+ 7 20.07	— 8	— 92	+14	23.26	+8	60.2
	V 1	D	14.2197	30.5180	+226	—5.3	—7.6	40 29 32.45	+ 6 52.24	— 8	—1.88	+12	22.85	—1	51.2
	3		30.8323iv	6.9977ii	— 24	— .5	—1.2	40 26 19 92	+10 1.96	+1.17	— 24	+24	23.05	—1	
	4		27.4323	13.1690	+ 26	+ .4	+ .3	40 42 23.91	— 6 0.33	+ 20	+ 11	—11	23.78	—2	
	6		20.7950	21.6730	+ 8	—3.6	—4.2	40 36 45.81	— 22.20	+ 14	—1.15	— 1	22.59	—2	51.3
	7		27.7513	12.9723	+ 34	+ .5	— .2	40 42 36.14	— 6 13.38	+ 21	+ 6	—13	22.90	—2	
	8		21.6333	16.9660	— 19	—1.5	—2.6	40 34 26.37	+ 1 57.84	+ 4	— 59	+ 4	23.70	—3	

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Oct.								° ′ ″					° ′ ″		
14	V 9		27.9637	14.1773	+ 87	—1.7	—3.1	40 42 12.69	— 5 48.44	+ 18	— 69	—10	40 36 23.64	—3	50.6
	VI 1		17.7610	26.3807	+105	—1.0	—1.9	40 32 45.56	+ 3 37.99	— 1	— 41	+ 7	23.20	—3	50.6
	2		24.7813	17.7893	+ 54	— .7	—1.5	40 33 27.18	+ 2 56.74	— 0	— 31	+ 5	23.66	—3	
	3		29.6873	13.7040	+160	— .7	—2.0	40 43 8.07	— 6 44.12	+ 21	— 38	—13	23.65	—3	
	4		24.1997	17.8227	+ 38	— .5	—1.5	40 33 42.19	+ 2 41.17	— 0	— 28	+ 5	23.13	—3	50.1
	6		10.2540ii	31.5587iv	+ 7	—1.2	—2.0	40 27 23.83	+ 8 58.15	+1.15	— 46	+19	22.86	—3	50.0
Oct.	7		22.3697	19.9860	+ 17	—2.2	—2.5	40 37 24.48	— 1 0.25	+ 8	— 70	— 2	23.59	—3	
16	V 1	R	30.5960	14.4027	+239	+1.9	+2.0	40 29 32.77	+ 6 49.62	— 8	+ 58	+12	23.01	—1	54.9
	2		20.1663	24.5160	+ 60	+1.6	+1.6	40 38 12.43	— 1 50.01	+ 10	+ 48	— 3	22.97	—1	
	3		12.9690ii	36.7973iv	+110	— .2	— .4	40 26 20.16	+10 2.13	+1.17	— 8	+24	23.62	—1	53.5
	4		14.9007	29.1540	+170	—1.3	—1.3	40 42 24.16	— 6 0.44	+ 20	— 39	—11	23.42	—2	
	5		31.7520iv	8.0120ii	— 2	—2.8	—1.7	40 26 22.77	+ 9 59.62	+1.12	— 69	+20	23.02	—2	
	6		23.4453	22.5627	+ 17	—1.4	—1.6	40 36 45.99	— 22.34	+ 14	— 44	— 1	23.34	—2	
	7		15.3547	30.0787	+236	—1.2	—3.0	40 42 36.31	— 6 12.50	+ 21	— 59	—13	23.30	—2	
	8		19.8340	24.4710	+ 60	— .8	—1.7	40 34 26.51	+ 1 57.27	+ 4	— 35	+ 4	23.51	—2	
	9		14.4910	28.2893	+114	—2.2	—2.8	40 42 12.84	— 5 48.81	+ 18	— 73	—10	23.38	—2	52.0
	10		23.7823	20.6587	+ 41	—1.4	— .9	40 37 42.71	— 1 19.00	+ 10	— 35	— 3	23.43	—3	
	VI 1		25.7637	17.1567	+ 73	—2.1	— .3	40 32 45.65	+ 3 37.58	— 1	— 40	+ 7	22.89	—3	
	2		18.7787	25.7830	+ 95	—1.8	—2.4	40 33 27.25	+ 2 57.16	— 0	— 61	+ 5	23.85	—3	
	3		14.0270	30.0167	+191	—1.8	—1.6	40 43 8.12	— 6 44.36	+ 21	— 51	—13	23.33	—3	52.3
	4		17.4323	23.8193	+ 22	—1.0	—1.8	40 33 42.20	+ 2 41.38	— 0	— 40	+ 5	23.23	—3	
	5		17.8507	23.2523	+ 18	—2.2	— .9	40 38 39.66	— 2 16.48	+ 12	— 49	— 4	22.77	—3	
	6		31.4320iv	10.1017ii	+ 6	—1.9	—2.0	40 27 23.79	+ 8 58.78	+1.15	— 58	+19	23.33	—3	
	7		20.8750	23.2436	+ 29	—2.7	—2.8	40 37 24.42	— 59.89	+ 8	— 82	— 2	23.77	—3	
	8		31.5090	15.2487	+325	— .9	—1.5	40 43 14.72	— 6 51.53	+ 21	— 35	—12	22.93	—3	*a*
Oct.															
19	I 1	D	25.2527	19.1507	+ 79	—1.5	— .3	40 33 48.82	+ 2 34.32	+ 1	— 29	+ 4	22.90	+9	61.9
	2		27.1397	12.8927	0	+ .1	— .2	40 42 22.83	— 5 59.84	+ 19	— 1	—10	23.07	+9	
	3		23.3527	18.0270	+ 22	—1.3	—1.1	40 34 9.23	+ 2 14.57	+ 1	— 36	+ 4	23.49	+9	
	4		19.9467	23.5903	+ 39	— .9	—1.9	40 34 51.61	+ 1 32.12	+ 3	— 40	+ 3	23.39	+9	59.6
	5		19.2847	24.1827	+ 51	+ .6	+ .3	40 34 19.56	+ 2 3.84	+ 2	+ 14	+ 3	23.59	+9	
	6		21.4503	22.2717	+ 10	— .3	—1.1	40 36 2.51	+ 20.77	+ 8	— 19	+ 1	23.18	+8	
	7		30.2387iv	11.3223ii	— 4	+ .7	— .4	40 28 24.71	+ 7 57.76	+1.15	+ 7	+15	23.84	+9	
	8		33.3223iv	9.4750ii	+ 31	—2.7	— .8	40 26 19.29	+10 2.35	+1.10	— 56	+17	22.35	+9	
	9		26.5483	14.4500	+ 36	— .5	— .2	40 31 18.30	+ 5 5.66	— 5	— 11	+ 8	23.88	+9	58.1
	10		14.4533	25.5583	0	—1.9	—1.7	40 41 3.59	— 4 40.48	+ 23	— 54	—12	22.68	+7	
	II 1		20.2490	19.5080	0	+ .3	+ .1	40 36 42.41	— 18.72	+ 14	+ 6	— 1	23.88	+7	56.9
	2		18.8923	19.0880	0	—2.1	—3.0	40 36 28.32	— 4.94	+ 10	— 74	0	22.74	+7	
	3		13.3703	30.7267	+210	— .8	—2.3	40 29 4.53	+ 7 18.91	— 8	— 43	+14	23.07	+8	55.6
	V 1	D	13.3740	29.6053	+143	— .6	—1.7	40 29 33.13	+ 6 50.35	— 8	— 32	+12	23.20	—1	48.8
	2		22.8940	18.5400	+ 18	+ .9	+ .1	40 38 12.75	— 1 50.03	+ 10	+ 17	— 3	22.96	—1	
	3		31.4503iv	7.6190ii	— 11	—3.2	—2.9	40 26 20.40	+10 1.93	+1.17	— 92	+24	22.82	—1	
	4		28.0190	13.7230	+ 73	— .6	—1 5	40 42 24.42	— 6 1.29	+ 20	— 29	—11	22.93	—2	
	5		7.9283ii	31.6563iv	— 5	— .5	—2.3	40 26 22.99	+ 9 59.34	+1.12	— 38	+20	23.27	—2	
	6		20.0030	20.9320	+ 3	—1.9	—1.9	40 36 46.15	— 23.47	+ 14	— 57	— 1	22.24	—2	
	7		26.9567	12.1743	— 38	+ .9	— .8	40 42 36.47	— 6 13.29	+ 21	+ 5	—13	23.31	—2	
	8		22.0423	17.4090	— 9	—3.4	—3.0	40 34 26.62	+ 1 57.01	+ 4	— 96	+ 4	22.75	—2	
	9		28.5730	14.7220	+136	— .1	0	40 42 12.95	— 5 50.21	+ 18	— 1	—10	22.81	—2	
	10		18.4567	21.6153	+ 1	—3.5	—3.2	40 37 42.79	— 1 19.79	+ 10	—1.01	— 3	22.06	—2	
	VI 1		16.2407	24.8793	+ 29	—1.4	—3.4	40 32 45.69	+ 3 38.28	— 1	— 68	+ 7	23.35	—3	
	2		25.3940	18.3873	+ 78	—2.4	—3.3	40 33 27.26	+ 2 57.18	— 0	— 83	+ 5	23.66	—3	
	3		29.7073	13.7137	+160	—1.9	—1.1	40 43 8.11	— 6 44.39	+ 21	— 46	—13	23.34	—3	46.3
	4		24.3440	17.9637	+ 44	—1.3	—2.2	40 33 42.10	+ 2 41.28	— 0	— 50	+ 5	22.93	—3	
	5		22.2727	17.9027	+ 2	— .8	—2.2	40 38 39.56	— 2 15.65	+ 12	— 42	— 4	23.57	—3	
	6		8.6413ii	29.9437iv	— 6	— .9	—1.8	40 27 23.66	+ 8 58.07	+1.15	— 38	+19	22.69	—3	
	7		20.9770	18.5927	— 3	— .3	—1.4	40 37 24.25	— 1 0.22	+ 8	— 23	— 2	23.86	—4	

1892	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
Oct.								° ′ ″					° ′ ″		
19	VI 8		12.9573	29.2467	+105	0	— .1	40 43 14.51	— 6 51.72	+ 21	— 1	—12	40 36 22.87	—3	46.3
Oct.	9		29.6150iv	9.7393ii	0	—1.7	—3.5	40 28 0.50	+ 8 22.04	+1.14	— 74	+16	23.10	—3	44.7
21	I 1	R	18.9013	25.0020	+ 70	+ .4	+ .2	40 33 48.77	+ 2 34.27	+ 1	+ 9	+ 4	23.18	+9	56.9
	2		14.6940	28.8910	+151	—2.8	—3.5	40 42 22.80	— 5 58.97	+ 19	— 93	—10	22.99	+9	
	3		19.1830	24.5107	+ 59	+ .4	— .7	40 34 9.23	+ 2 14.72	+ 1	— 2	+ 4	23.98	+9	55.4
	4		23.1043	19.4567	+ 27	—2.2	—2.4	40 34 51.63	+ 1 32.20	+ 3	— 68	+ 3	23.21	+9	
	5		24.3007	19.3673	+ 53	—2.8	—3.7	40 34 19.61	+ 2 4.74	+ 2	— 95	+ 3	23.45	+9	
	6		24.3480	23.5130	+ 19	— .8	—1.5	40 36 2.58	+ 21.14	+ 8	— 33	+ 1	23.48	+9	53.6
	8		9.0550ii	32.9323iv	+ 22	— .5	—1.3	40 26 19.41	+10 3.15	+1.10	— 25	+17	23.58	+9	52.4
	9		16.7263	28.8047	+196	— .1	—1.6	40 31 18.44	+ 5 5.57	— 5	— 22	+ 8	23.82	+9	
	10		28.6770	17.6000	+206	0	—1.5	40 41 3.75	— 4 40.30	+ 23	— 19	—12	23.37	+7	52.4
	II 1		21.5627	22.2903	+ 8	—2.9	—3.3	40 36 42.58	— 18.40	+ 14	— 92	— 1	23.39	+7	
	2		21.8040	21.6080	0	—1.2	—1.9	40 36 28.52	— 4.95	+ 10	— 45	0	23.22	+7	51.7
	3		30.4873	13.1200	+185	—2.2	—1.5	40 29 4.86	+ 7 19.13	— 8	— 57	+14	23.48	+8	50.9
	V 1	R	29.8907	13.6753	+170	—1.5	—1.6	40 29 33.33	+ 6 50.04	— 8	— 46	+12	22.95	—1	44.1
	2		19.9930	24.3413	+ 55	+1.0	0	40 38 12.92	— 1 49.98	+ 10	+ 17	— 3	23.18	—1	
	3		11.0537ii	34.8760iv	+ 67	— 3	—1.8	40 26 20.50	+10 1.92	+1.17	— 28	+24	23.55	—1	
	4		14.9957	29.2703	+180	—2.5	—1.3	40 42 24.55	— 6 1.04	+ 20	— 59	—11	23.01	—1	
	5		33.1123iv	9.3827ii	+ 27	— .5	— .2	40 26 23.09	+ 9 59.48	+1.12	— 11	+20	23.78	—2	43.1
	6		24.0117	23.1193	+ 18	— .3	—1.7	40 36 46.20	— 22.59	+ 14	— 27	— 1	23.47	—2	
	7		15.5940	30.3433	+258	—2.6	—2.1	40 42 36.52	— 6 13.22	+ 21	— 71	—13	22.67	—2	
	8		20.2270	24.8107	+ 68	+ .3	— .2	40 34 26.64	+ 1 55.95	+ 4	+ 2	+ 4	22.69	—2	
	9		13.5760	27.4210	+ 42	— .8	+ .2	40 42 12.96	— 5 49.84	+ 18	— 11	—10	23.09	—2	
	10		23.5457	20.4450	+ 37	—1.0	—3.2	40 37 42.77	— 1 18.42	+ 10	— 58	— 3	23.84	—2	43.0
	VI 1		25.2653	16.6300	+ 47	—4.5	—2.8	40 32 45.65	+ 3 38.24	— 1	—1.12	+ 7	22.83	—3	42.4
	2		19.7730	26.7563	+134	+ .3	+ .1	40 33 27.20	+ 2 56 73	— 0	+ 6	+ 5	24.04	—3	
	3		14.6383	30.5923	+245	—4.1	—3.3	40 43 8.03	— 6 43.62	+ 21	—1.12	—13	23.37	—3	
	4		17.2597	23.6670	+ 17	—1.0	—1.3	40 33 41.98	+ 2 41.89	— 0	— 34	+ 5	23.58	—3	41.8
	5		19.1980	24.5553	+ 59	—3.5	—2.6	40 38 39.42	— 2 15.47	+ 12	— 93	— 4	23.10	—3	*a*
	6		34.6177iv	13.2980ii	+ 30	—2.4	—1.6	40 27 23.51	+ 8 58.62	+1.15	— 61	+19	22.86	—3	
	7		19.4417	21.8277	+ 8	—1.6	— .3	40 37 24.07	— 1 0.29	+ 8	— 31	— 2	23.53	—4	
	8		30.8533	14.6220	+262	+ .7	—1.1	40 43 14.30	— 6 50.67	+ 21	— 2	—12	23.70	—4	42.6
Oct.	9		12.2993ii	32.1687iv	0	+ .1	+ .3	40 28 0.26	+ 8 21.91	+1.14	+ 5	+16	23.52	—3	42.5
23	I 1	D	25.0083	18.9210	+ 74	+1.1	+1.7	40 33 48.72	+ 2 33.94	+ 1	+ 41	+ 4	23.12	+9	55.0*a*
	2		27.1413	12.8933	0	+ .4	+2.3	40 42 22.79	— 5 59.88	+ 19	+ 36	—10	23.36	+9	
	3		24.0290	18.7517	+ 42	+1.5	+2.7	40 34 9.25	+ 2 13.40	+ 1	+ 60	+ 4	23.30	+9	
	4		17.9353	21.5477	— 7	+2.2	+3.0	40 34 51.68	+ 1 31.23	+ 3	+ 76	+ 3	23.73	+9	
	5		18.5767	23.4780	+ 31	+ .6	+1.0	40 34 19.69	+ 2 3.87	+ 2	+ 23	+ 3	23.84	+9	
	8		33.0250iv	9.1660ii	+ 24	— .6	— .3	40 26 19.54	+10 2.69	+1.10	— 14	+17	23.36	+9	52.9
	9		27.9260	15.8713	+135	— .6	— .3	40 31 18.62	+ 5 4.79	— 5	— 14	+ 8	23.30	+9	
	II 1		20.6193	19.8503	0	+ .1	— .4	40 36 42.80	— 19.42	+ 14	— 3	— 1	23.48	+7	
	2		20.5323	20.7503	0	—2.2	—2.1	40 36 28.76	— 5.51	+ 10	— 64	0	22.71	+7	
	3		13.1227	30.4800	+185	—1.2	—1.8	40 29 5.03	+ 7 18.88	— 8	— 43	+14	23.54	+8	51.3
	V 1	D	12.5303	28.7220	+ 57	+1.9	+ .9	40 29 33.56	+ 6 49.14	— 8	+ 44	+12	23.18	0	45.6
	2		20.7237	16.3733	— 37	—1.0	—1.3	40 38 13.11	— 1 49.80	+ 10	— 34	— 3	23.04	—1	
	3		31.2983iv	7.4963ii	— 15	— .5	— .8	40 26 20.64	+10 1.19	+1.17	— 19	+24	23.05	—1	45.5
	4		26.3777	12.0910	— 65	—1.7	—1.7	40 42 24.69	— 6 0.71	+ 20	— 51	—11	23.56	—1	
	5		8.0880ii	31.8173iv	— 1	+1.8	0	40 26 23.21	+ 9 59.39	+1.12	— 30	+20	23.62	—2	
Oct.	6		20.1630	21.0987	+ 4	—2.9	—1.6	40 36 46.26	— 23.65	+ 14	— 70	— 1	22.04	—2	45.4
24	I 2	R	14.5427	28.7530	+137	—2.4	—2.1	40 42 22.77	— 5 59.29	+ 19	— 68	—10	22.89	+9	47.1
	3		19.8007	25.1057	+ 76	— .1	— .6	40 34 9.25	+ 2 14.19	+ 1	— 9	+ 4	23.40	+9	
	4		26.5597	22.9373	+101	+ .3	— .7	40 34 51.70	+ 1 31.76	+ 3	— 4	+ 3	23.48	+9	
	5		24.0010	19.0987	+ 44	—1.7	—1.9	40 34 19.72	+ 2 3.94	+ 2	— 53	+ 3	23.18	+9	46.1
Oct.	6		24.9517	24.1530	+ 20	0	+ .1	40 36 2.73	+ 20.23	+ 8	+ 1	+ 1	23.06	+8	45.2
30	I 5	D	18.1607	23.0460	+ 18	— .3	— .2	40 34 19.51	+ 2 3.45	+ 3	— 7	+ 3	22.95	+9	47.7

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Oct. 30	6		18.5357	19.3257	— 5	+ .7	+1.6	40 36 2.63	+ 19.94	+ 9	+ 32	+ 1	40 36 22.99	+8	
	7		32.0200iv	13.1583ii	— 20	— .2	— .4	40 28 24.98	+ 7 56.39	+1.22	— 8	+15	22.66	+8	
	8		33.8360iv	10.0163ii	+ 43	+ .1	+ .2	40 26 19.66	+10 1.79	+1.18	+ 4	+17	22.84	+9	
	9		27.3353	15.2983	+ 92	+ .7	— .2	40 31 18.81	+ 5 4.28	— 1	+ 9	+ 8	23.25	+9	
	10		14.4323	25.5983	0	— .1	+ .5	40 41 4.30	— 4 42.05	+ 19	+ 5	—12	22.37	+7	45.6
	II 1		22.4637	21.6620	+ 10	—1.9	— .8	40 36 43.24	— 20.27	+ 13	— 43	— 1	22.66	+7	45.1
	2		19.2777	19.5237	0	— .2	+ .9	40 36 29.28	— 6.21	+ 10	+ 8	0	23.25	+7	
	3		13.2400	30.5687	+195	— .4	—1.0	40 29 5.69	+ 7 18.21	— 2	— 20	+14	23.82	+8	
	4		22.6017	18.3653	+ 13	—1.9	—3.5	40 38 9.96	— 1 47.04	+ 12	— 77	— 4	22.23	+7	43.5
	6		33.2243iv	11.9460ii	+ 4	— .6	—1.4	40 27 49.48	+ 8 32.23	+1.19	— 28	+14	22.76	+8	
	7		12.9587ii	28.9220iv	— 22	—2.2	—3.3	40 29 39.64	+ 6 43.17	+1.21	— 80	+12	23.34	+8	
	8		29.3240	14.2807	+158	+ .3	— .4	40 42 43.66	— 6 20.39	+ 15	0	—11	23.31	+8	
	9		18.2493	20.5157	— 8	—1.2	—2.4	40 37 20.78	— 57.23	+ 13	— 51	— 2	23.15	+6	42.3
V	6	D	19.4443	20.4150	+ 2	—1.0	—1.4	40 36 46.90	— 24.52	+ 14	— 35	— 1	22.16	—1	39.2
	7		27.5480	12.7307	+ 13	—1.5	—2.6	40 42 37.20	— 6 14.33	+ 16	— 59	—13	22.31	—2	
	9		29.9267	16.1323	+246	—1.0	—1.2	40 42 13.49	— 5 49 08	+ 14	— 32	—10	24.13	—2	
	10		20.4410	23.5983	+ 38	+ .7	— .3	40 37 43.17	— 1 19 85	+ 9	+ 8	— 3	23.46	—2	39.2
VI	1		15.4953	24.1277	— 10	— .9	—1.7	40 32 45.93	+ 3 38.04	+ 2	— 37	+ 7	23.69	—3	
	2		24.9207	17.9310	+ 57	—2.5	—3.1	40 33 27.39	+ 2 56.71	+ 2	— 82	+ 5	23.35	—3	
	3		28.4627	12.4567	+ 43	— .4	—1.6	40 43 8.11	— 6 44.44	+ 16	— 27	—13	23.43	—3	
	4		23.2653	17.8913	+ 18	—1.2	—1.7	40 33 41.82	+ 2 41.06	+ 2	— 42	+ 5	22.53	—3	37.6
	5		24.3283	18.9580	+ 52	—1.9	—2.9	40 38 39.17	— 2 15 79	+ 10	— 70	— 4	22.74	—3	*a*
	6		10.2803ii	31.6173iv	+ 7	+ .2	— .4	40 27 23.16	+ 8 59.01	+1.22	— 1	+19	23.57	—3	37.5
	8		12.4813	28.7427	+ 59	—1.6	—1.0	40 43 13.70	— 6 50.93	+ 16	— 40	—12	22.41	—4	
	9		31.4900iv	11.5943ii	0	—1.0	—1.2	40 27 59.50	+ 8 22.59	+1.21	— 32	+16	23.14	—4	36.3
	10		24.0840	18.1707	+ 40	— .4	— .3	40 33 52.94	+ 2 29.48	+ 3	— 11	+ 4	22.38	—4	
	11		14.3693	27.0563	+ 54	—1.5	—3.0	40 31 3.13	+ 5 20.63	— 0	— 64	+10	23.22	—4	
	12		30.4850	8.9913	— 31	—1.7	—1.8	40 27 20.56	+ 9 2.88	— 5	— 52	+17	23.04	—4	35.9
Nov. 5	VII 2		25.6013	16.8433	+ 63	+ .4	— .6	40 40 4.32	— 3 41.39	+ 11	0	— 7	22.97	—4	35.9*a*
	I 5	R	24.8843	20.0173	+ 70	+1.4	+1.6	40 34 19.26	+ 2 3.12	+ 3	+ 44	+ 3	22.88	+9	
	6		23.2530	22.4567	+ 14	+ .1	+1.5	40 36 2.50	+ 20.15	+ 9	+ 21	+ 1	22.96	+8	34.2
	7		11.9987ii	30.8263iv	— 9	+2.7	+3.2	40 28 24.91	+ 7 55.60	+1.22	+ 87	+15	22.75	+8	
	8		10.8767ii	34.7077iv	+ 61	+2.1	+1.1	40 26 19.64	+10 2.17	+1.18	+ 50	+17	23.66	+9	
	9		16.2880	28.3073	+163	+2.0	+2.4	40 31 18.85	+ 5 4.05	— 1	+ 65	+ 8	23.62	+9	32.9
	II 2		22.6030	22.2733	+ 5	+5.6	+6.0	40 36 29.58	— 8.34	+ 10	+1.73	0	23.07	+7	32.6
	3		31.2757	14.0193	+272	+ .6	+1.5	40 29 6.06	+ 7 16.62	— 2	+ 30	+14	23.10	+8	32.6
Nov. 8	5		30.6520iv	12.9323ii	— 23	+3.6	+5.8	40 28 52.16	+ 7 27.58	+1.21	+1.36	+13	22.44	+8	32.5
	I 8	D	33.8863iv	10.0347h	+ 45	— .2	— .6	40 26 19.64	+10 2.59	+1.18	— 11	+17	23.47	+9	51.2
	9		28.4560	16.4230	+172	+ .7	— .2	40 31 18.90	+ 5 4.37	— 1	+ 9	+ 8	23.43	+9	
	10		13.7070	24.8777	— 47	+ .9	+ .3	40 41 4.61	— 4 42.04	+ 19	+ 19	—12	22.83	+7	50.2
	II 1		21.6350	20.7890	+ 7	+1.0	+1.1	40 36 43.66	— 21.39	+ 13	+ 31	— 1	22.70	+7	
	2		19.7827	20.0520	0	+ .3	— .5	40 36 29.78	— 6.80	+ 10	— 1	0	23.07	+7	
	3		12.2793	29.5590	+ 93	+ .9	— .4	40 29 6.31	+ 7 16.70	— 2	+ 10	+14	23.23	+8	48.5
	4		23.2843	18.9977	+ 30	—1.2	—1.5	40 38 10.68	— 1 48.35	+ 12	— 40	— 4	22.01	+8	48.4
	5		12.6310	30.4600	+163	— .5	— .8	40 28 52.49	+ 7 30.76	— 4	— 19	+13	23.15	+8	
	6		31.8583iv	11.6110ii	+ 3	— .2	— .4	40 27 50.43	+ 8 31.44	+1.19	— 8	+14	23.12	+8	
	7		14.4280ii	30.2787iv	— 56	+1.4	+1.9	40 29 40.65	+ 6 40.23	+1.21	+ 48	+12	22.69	+8	
	8		28.8917	13.8383	+122	—1.6	—1.8	40 42 44.74	— 6 20.54	+ 15	— 50	—11	23.74	+8	
Nov. 11	9		19.8270	22.1523	+ 14	+ .1	— .1	40 37 21.88	— 58.77	+ 13	0	— 2	23.22	+7	47.3
	I 6	R	23.7383	22.8550	+ 17	—2.6	—3.2	40 36 2.23	+ 22.35	+ 9	— 86	+ 1	23.82	+7	38.7
	7		12.9193ii	31.8147iv	— 15	—1.2	— .9	40 28 24.71	+ 7 57.28	+1.22	— 32	+15	23.04	+8	
	9		16.4783	28.5327	+177	—1.5	—2.7	40 31 18.78	+ 5 4.96	— 1	— 60	+ 8	23.21	+9	
	10		28.9697	17.9233	+223	—1.2	—2.4	40 41 4.59	— 4 39.61	+ 19	— 52	—12	24.53	+7	37.2
	II 1		22.7827	23.6053	+ 15	+ .5	— .1	40 36 43.69	— 20.82	+ 13	+ 7	— 1	23.06	+7	36.8
	2		23.2407	23.0043	+ 5	—2.0	—3.2	40 36 29.84	— 5.98	— 10	— 75	0	23.21	+7	

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Nov. 11	II 3		30.9540	13.6847	+236	— .7	—2.3	40 29 6.42	+ 7 16.84	— 2	— 41	+14	40 36 22.97	+8	35.6
	4		21.0013	25.2693	+ 79	— .2	— .9	40 38 10.82	— 1 48.02	+ 12	— 15	— 4	22.73	+8	35.6
	6		11.1087ii	31.3877iv	0	—2.3	—4.2	40 27 50.67	+ 8 32.27	+1.19	— 93	+14	23.34	+8	
	7		31.1637iv	15.2303ii	— 76	—4.8	—4.6	40 29 40.91	+ 6 42.30	+1.21	—1.41	+12	23.13	+8	
	8		14.8967	29.9960	+218	+1.3	+1.6	40 42 45.03	— 6 21.97	+ 15	+ 42	—11	23.52	+8	
Nov. 13	9		25.2543	22.9807	+ 53	—2.9	—3.5	40 37 22.20	— 57.56	+ 13	— 95	— 2	23.80	+7	34.7
	I 5	D	19.0670	24.0293	+ 44	— .8	—1.7	40 34 18.57	+ 2 5.47	+ 3	— 36	+ 3	23.74	+8	39.7
	6		19.9013	20.7400	+ 2	— .1	—1.3	40 36 1.99	+ 21.19	+ 9	— 18	+ 1	23.10	+7	37.9
	7		30.3000iv	11.4207ii	— 5	+ .3	—1.6	40 28 24.51	+ 7 56.89	+1.22	— 15	+15	25.62	+8	
	8		32.6750iv	8.8127ii	+ 18	— .8	—1.6	40 26 19.28	+10 2.83	+1.18	— 34	+17	23.12	+8	
	9		27.2670	15.2107	+ 88	— .6	— .8	40 31 18.61	+ 5 4.78	— 1	— 20	+ 8	23.26	+8	37.7
	10		14.9373	26.0713	+ 33	— .8	+ .3	40 41 4.50	— 4 41 34	+ 19	— 9	—12	23.14	+7	
	II 1		20.8150	19.9937	+ 3	+1.3	+2.3	40 36 43.62	— 20.75	+ 13	+ 51	— 1	23.50	+7	
	2		20.7363	20.9990	+ 0	— .4	—1.6	40 36 29.78	— 6.64	+ 10	— 27	0	22.97	+7	37.8
	3		12.5447	29.8130	+119	+ .6	+ .4	40 29 6.39	+ 7 16.51	— 2	+ 15	+14	23.17	+8	37.4
	4		23.2783	19.0013	+ 30	+ .6	—1.6	40 38 10.84	— 1 48.12	+ 12	— 10	— 4	22.70	+7	
	5		13.7820	31.5917	+282	+ .9	—1.2	40 28 52.69	+ 7 30.60	— 4	0	+13	23.38	+8	
	6		31.8453iv	11.5957ii	0	—1.6	—2.4	40 27 50.71	+ 8 31.53	+1.19	— 58	+14	22.99	+8	
	7		13.9580ii	29.8283iv	— 44	— .8	— .4	40 29 40.98	+ 6 40.79	+1.21	— 18	+12	22.92	+8	
	8		28.9703	13.8690	+127	— .1	— .2	40 42 45.13	— 6 21.80	+ 16	— 4	—11	23.34	+8	37.0
	9		19.0237	21.3750	+ 5	— .9	—2.0	40 37 22.32	— 59.41	+ 13	— 41	— 2	22.61	+7	37.0
	VI 3	R	12.6310	28.6740	+ 61	+ .3	+ .2	40 43 8.36	— 6 45.43	+ 16	+ 7	—13	23.03	—3	37.0
	4		18.5797	24.9590	+ 67	— .1	—1.4	40 33 41.74	+ 2 41.32	+ 2	— 19	+ 5	22.94	—3	37.1
	5		20.4083	25.7700	+ 97	—2.0	— .5	40 38 38.96	— 2 15.69	+ 10	— 42	— 4	22.91	—3	
	6		33.8000iv	12.4667ii	+ 26	— .9	— .2	40 27 22.79	+ 8 58.98	+1.22	— 18	+19	23.00	—3	
	8		28.8277	12.6300	+ 68	+1.6	+ .2	40 43 12.98	— 6 49.35	+ 16	+ 30	—12	23.97	—4	37.0
	9		12.5543ii	32.4947iv	+ 0	+ .1	—1.1	40 27 58.53	+ 8 23.72	+1.21	— 12	+16	23.50	—4	
	10		19.6527	25.6473	+ 93	+ .4	— .6	40 33 51.72	+ 2 31.67	+ 3	0	+ 4	23.46	—4	
	11		29.4350	16.7103	+230	—1.1	—1.1	40 31 1.80	+ 5 22.02	— 0	— 33	+10	23.59	—4	
	12		12.0283	33.5973	+359	—1.4	—1.9	40 27 18.95	+ 9 5.77	— 5	— 48	+17	24.36	—4	35.4
	VII 1		31.3967	16.6520	+350	—1.1	—1.6	40 30 10.54	+ 6 13.36	— 0	— 39	+13	23.64	—4	
	2		18.6667	27.3207	+153	— .3	+ .4	40 40 2.41	— 3 38.99	+ 11	0	— 7	23.46	—4	
Nov. 16	3		22.8863	19.5637	+ 23	—3.2	—2.7	40 35 0.02	+ 1 24.00	+ 4	— 89	+ 3	23.20	—5	35.3
	VI 4	D	23.4243	17.0313	+ 8	—1.5	—2.3	40 33 41.76	+ 2 41.51	+ 2	— 54	+ 5	22.80	—3	45.3
	5		23.0957	17.7473	+ 13	—3.0	—3.2	40 38 38.96	— 2 15.13	+ 10	— 92	— 4	22.97	—3	
	7		21.3693	18.9850	+ 00	+ .6	— .0	40 37 23.04	— 1 0.23	+ 7	+ 10	— 2	22.96	—4	44.4
	8		12.3710	28.5993	+ 47	+ .6	— .3	40 43 12.89	— 6 50.05	+ 16	+ 6	—12	22.94	—4	
	9		29.6537iv	9.7233ii	+ 0	— .7	— .6	40 27 58.39	+ 8 23.45	+1.21	— 19	+16	23.02	—4	
	10		23.0177	16.9767	0	—1.3	—3.2	40 33 51.54	+ 2 32.59	+ 3	— 63	+ 4	23 57	—4	41.9
	11		15.2477	27.9583	+120	— .5	— .9	40 31 1.60	+ 5 21.38	— 0	— 20	+10	22.88	—4	42.1
	12		30.2563	8.6877	— 67	—1.3	— .7	40 27 18.70	+ 9 4.66	— 5	— 31	+17	23.17	—4	42.1
	VII 1		11.7043	26.4950	— 79	—1.2	—1.8	40 30 10.28	+ 6 13.42	— 0	— 43	+13	23.40	—4	
	2		24.5320	15.8497	+ 10	+ 3	0	40 40 2.11	— 3 39.35	+ 11	+ 5	— 7	22.85	—5	
	3		17.0093	20.3380	— 26	— .7	—1.4	40 34 59.69	+ 1 24.02	+ 4	— 30	+ 3	23.48	—5	41.0
	5		11.9537	29.6147	+ 82	—1.2	—3.1	40 28 57.93	+ 7 26.33	— 5	— 60	+13	23.74	—5	41.1
Nov. 17	7		15.0390	26.7403	+ 61	— .2	—1.3	40 41 19.24	— 4 55.74	+ 12	— 20	— 8	23.34	—5	40.4
	I 8	R	8.8637ii	32.7473iv	+ 19	+ .9	— .4	40 26 18.95	+10 3.30	+1.18	+ 10	+17	23.70	+8	55.3
	9		11.8830	23.9633	—148	+ .1	— .8	40 31 18.32	+ 5 4.75	— 1	— 9	+ 8	23.05	+8	
	10		25.4193	14.2980	— 11	+ .1	—1.6	40 41 4.35	— 4 40.87	+ 19	— 20	—12	23.35	+7	55.3
	II 1		21.5277	22.3657	+ 12	+ .2	+1.2	40 36 43.51	— 21.20	+ 13	+ 19	— 1	22.62	+7	55.3
	2		21.5427	21.2890	0	—1.5	—1.4	40 36 29.70	— 6.41	+ 10	— 43	0	22.96	+7	
	3		28.0480	10.7507	— 63	— .7	—2.9	40 29 6.34	+ 7 16.74	— 2	— 49	+14	22.71	+8	53.5
	4		19.5963	23.8617	+ 42	—1.8	— .2	40 38 10.83	— 1 47.84	+ 12	— 33	— 4	22.74	+7	
	5		29.1567	11.3393	+ 26	—2.1	— .8	40 28 52.71	+ 7 30.10	— 4	— 46	+13	22.44	+8	53.5
	6		8.1077ii	28.3297iv	— 00	+ .6	— .2	40 27 50.80	+ 8 30.77	+1.19	+ 7	+14	22.97	+8	

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
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Nov. 20	II 7		28.9503iv	13.0967ii	— 35	— .9	—1.5	40 29 41.09	+ 6 40.36	+1.21	— 35	+12	40 36 22.43	+8	
	8		12.4353	27.5600	— 1	—2.9	—1.5	40 42 45.28	— 6 22.01	+ 15	— 69	—11	22.62	+8	
	9		23.2027	20.8307	+ 28	+ .8	0	40 37 22.51	— 59.99	+ 13	+ 13	— 2	22.76	+7	54.4
	VI 7	R	18.9610	21.2617	+ 4	—2.2	—4.9	40 37 22.87	— 58.14	+ 7	—1.00	— 2	23.78	—4	32.0
	8		28.9653	12.8040	+ 84	—1.4	— .4	40 43 12.66	— 6 48.48	+ 16	— 29	—12	23.93	—4	
	9		10.6513ii	30.6013iv	— 0	—1.3	—1.2	40 27 58.09	+ 8 23.98	+1.16	— 37	+16	23.02	—4	
Nov.	10		16.8540	22.8770	— 5	+1.7	+1.8	40 33 51.18	+ 2 32.14	+ 3	+ 52	+ 4	23.91	—4	32.5
22	VI 9	R	10.0157ii	29.9720iv	0	— .3	— .5	40 27 58.01	+ 8 24.16	+1.12	— 11	+16	23.34	—4	
	10		16.7713	22.7907	— 8	+ .9	+ .4	40 33 50.96	+ 2 32.05	+ 3	+ 20	+ 4	23.28	—4	28.2
	11		26.1470	13.3913	— 17	— .8	— .9	40 31 1.06	+ 5 22.20	— 0	— 25	+10	23.11	—4	27.7
	12		10.9727	32.5430	+225	+1.0	— .3	40 27 18.05	+ 9 5.50	— 5	+ 13	+17	23.80	—4	
	VII 2		15.2960	23.9317	— 21	—2.9	—1.5	40 40 1.33	— 3 38.11	+ 11	— 69	— 7	22.57	—5	
	3		21.8243	18.4680	+ 3	—1.7	— .9	40 34 58.84	+ 1 24.80	+ 4	— 40	+ 3	23.31	—5	
	5		29.3600	11.7087	+ 54	— .9	— .4	40 28 56.92	+ 7 26.04	— 5	— 20	+13	22.84	—5	
	6		27.7630	13.6850	+ 61	+ .7	+ .3	40 42 19.22	— 5 55.81	+ 14	+ 16	—10	23.61	—5	26.8
	7		25.9657	14.2837	+ 9	+ .8	0	40 41 17.99	— 4 55.15	+ 12	+ 13	— 8	23.01	—5	
	8		19.3770	21.6607	+ 9	— .2	+ .7	40 37 19.76	— 57.72	+ 6	+ 5	— 2	22.13	—5	
Nov.	10		20.7647	21.6373	+ 8	+1.8	+1.9	40 36 43.95	— 22.06	+ 6	+ 55	— 1	22.49	—5	27.2
26	VI 10	D	22.5507	16.5010	— 17	—1.3	—2.4	40 33 51.00	+ 2 32.79	+ 3	— 53	+ 4	23.33	—4	24.6
	11		13.6047	26.3847	0	—1.6	—1.0	40 31 0.96	+ 5 22.87	— 0	— 40	+10	23.53	—4	
	VII 1		11.1823	25.9957	—124	+ .3	— .8	40 30 9.38	+ 6 13.93	— 0	— 5	+13	23.39	—4	24.5
	2		25.4947	16.8967	+ 61	—1.5	—1.8	40 40 1.07	— 3 37.38	+ 11	— 48	— 7	23.25	—5	
	3		17 5880	20.9727	— 15	— .8	—1.4	40 34 58.53	+ 1 25.47	+ 4	— 31	+ 3	23.76	—5	
	5		12.5347	30.2310	+142	— .8	—2.2	40 28 56.50	+ 7 27.43	— 5	— 42	+13	23.59	—5	
	6		13.1140	27.1880	+ 13	+ .1	—1.2	40 42 18.72	— 5 55.60	+ 12	— 14	—10	23.00	—5	22.3
	7		13.8847	25.5340	— 19	— .5	—1.7	40 41 17.40	— 4 54.26	+ 12	— 30	— 8	22.88	—5	
	8		20.8523	18.6750	— 2	—1.6	—2.9	40 37 19.10	— 55.00	+ 6	— 65	— 2	23.49	—5	22.3
	9		12.4800	25.1400	— 90	—1.4	—1.5	40 31 4.17	+ 5 19.61	+ 2	— 43	+11	23.48	—5	
	10		20.1767	19.3977	0	— .6	—1.2	40 36 43.18	— 19.68	+ 6	— 25	— 1	23.30	—5	22.3
	VIII 1		18.2933	21.3187	— 4	— .2	— .7	40 37 39.20	— 1 16.42	+ 7	— 12	— 2	22.71	—5	22.3
Dec.	2		25.8810	13.5353	— 21	—1.2	—1.3	40 31 10.68	+ 5 11.85	+ 3	— 37	+12	22.31	—5	22.2
1	II 3	D	11.7883	29.1067	+ 45	—1.7	—3.4	40 29 5.90	+ 7 17.62	+ 3	— 73	+14	22.96	+7	30.5
	4		22.0540	17.7850	— 2	—1.0	—1.5	40 38 10.67	— 1 47.84	+ 11	— 36	— 4	22.54	+7	
	5		12.1303	29.9367	+107	— .5	—1.1	40 28 52.56	+ 7 30.10	+ 2	— 22	+13	22.59	+8	30.4
	6		31.0253iv	10.8203ii	0	— .7	+ .1	40 27 50.86	+ 8 30.43	+1.05	— 10	+14	22.38	+8	
	7		12.1153ii	27.9560iv	— 1	+ .5	+ .7	40 29 41.28	+ 6 40.17	+1.06	+ 17	+12	22.80	+8	
	8		28.2353	13.0833	+ 59	+1.7	+ .9	40 42 45.66	— 6 22.92	+ 11	+ 40	—11	23.14	+8	
	9		20.4403	22.8487	+ 23	+ .8	+ .7	40 37 23.12	— 1 0.90	+ 13	+ 22	— 2	22.55	+7	30.1
	III 1		16.7253	24.9920	+ 42	— .2	— .2	40 39 51.68	— 3 28.94	+ 8	— 6	— 6	22.70	+8	29.9
	2		5.8713ii	34.5057iv	+ 10	+ .3	+ .4	40 24 18.18	+12 3.40	+1.05	+ 10	+21	22.94	+7	
	3		25.0677	14.0140	— 30	+ .8	+ .1	40 41 1.72	— 4 39.17	+ 10	+ 15	— 8	22.72	+7	29.9
	5		17.5073	21.4103	— 14	—2.9	—2.2	40 38 2.23	— 1 38.56	+ 8	— 78	— 3	22.94	+7	
	6		26.1617	12.1393	— 71	+2.0	+2.1	40 42 17.18	— 5 54.06	+ 17	+ 61	—14	23.76	+6	
Dec.	7		17.6567	23.5633	+ 21	— .4	+1.8	40 38 52.45	— 2 29.27	+ 7	+ 16	— 4	23.37	+7	30.1
2	II 3	R	30.5257	13.2403	+193	+1.1	— .5	40 29 5.87	+ 7 17.14	+ 3	+ 12	+14	23.30	+7	35.4
	4		18.2100	22.4733	+ 9	—2.1	—2.0	40 38 10.64	— 1 47.72	+ 11	— 62	— 4	22.37	+7	35.0
	5		29.3710	11.5490	+ 47	— .8	—1.2	40 28 52.54	+ 7 30.34	+ 2	— 29	+13	22.74	+8	
	6		10.2647ii	30.5017iv	0	+ .6	— .2	40 27 50.86	+ 8 31.22	+1.01	+ 7	+14	23.30	+8	
	7		27.8563iv	11.9827ii	+ 2	—2.2	—2.5	40 29 41.28	+ 6 41.00	+1.02	— 70	+12	22.72	+8	
	8		12.5187	27.6343	+ 5	—2.0	—1.7	40 42 45.67	— 6 21.86	+ 11	— 56	—11	23.25	+8	
	9		22.3557	20.0000	+ 18	—1.6	—1.8	40 37 23.16	— 59.55	+ 13	— 50	— 2	23.22	+7	33.7
	III 1		24.4273	16.1870	+ 15	— .1	— .2	40 39 51.72	— 3 28.21	+ 8	— 4	— 6	23.49	+8	33.4
	2		34.6310iv	5.9597ii	+ 16	— .9	—2.1	40 24 18.23	+12 4.33	+1.01	— 42	+21	23.36	+7	
	4		15.7830	27.4483	+113	—1.4	— .3	40 41 18.42	— 4 54.97	+ 9	— 28	— 8	23.18	+7	33.5
	5		22.7487	18.8283	+ 19	— .8	— .2	40 38 2.32	— 1 39.09	+ 8	— 16	— 3	23.12	+7	33.3

1892	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 2	III 6		13.9450	27.9417	+ 79	0	—1.0	40 42 17.26	— 5 53.78	+ 16	— 13	—14	40 36 23.37	+6	33.5
	7		21.7507	15.8313	— 41	— .3	—1.5	40 38 52.55	— 2 29.43	+ 7	— 24	— 4	22.91	+7	33.5
Dec. 3	8		15.1960	25.7843	+ 31	—2.6	—2.9	40 40 51.67	— 4 27.56	+ 11	— 82	— 9	23.31	+6	33.8
	II 3	D	11.4737	28.7547	+ 12	+2.3	+ .2	40 29 5.84	+ 7 16.56	+ 3	+ 41	+14	22.98	+7	41.5
	6		29.3603iv	9.1443ii	0	— .6	— .9	40 27 50.86	+ 8 30.67	—1.01	— 21	+14	22.47	+8	
	7		12.0283ii	27.8530iv	+ 2	+2.4	+1.6	40 29 41.29	+ 6 39.74	+1.02	+ 61	+12	22.78	+8	
	8		27.4493	12.2940	— 12	+1.7	+ .6	40 42 45.70	— 6 22.80	+ 11	+ 36	—11	23 26	+8	41.1
	9		18.8677	21.2647	+ 1	— .7	—1.2	40 37 23.20	— 1 0.55	+ 13	— 27	— 2	22.49	+7	41.1
	III 1		17.2477	25.5123	+ 66	—1.0	—2.3	40 39 51.77	— 3 28.94	+ 8	— 46	— 6	22.39	+8	
	2		6.0847ii	34.7057iv	+ 21	+ .6	+ .8	40 24 18.28	+12 3.04	+1.01	+ 20	+21	22.74	+7	40.0
	3		24.5407	13.4890	— 63	— .4	— .4	40 41 1.85	— 4 39.01	+ 10	— 12	— 8	22.74	—7	
	4		26.7793	15.1037	+ 68	—1.4	—2.0	40 41 18.50	— 4 55.10	+ 9	— 50	— 8	22.91	+7	39.4
	5		17.7960	21.7303	— 8	— .4	— .7	40 38 2.40	— 1 39.36	+ 8	— 16	— 3	22.93	+7	
	6		25.9750	11.9223	— 88	+2.5	+3.1	40 42 17.36	— 5 54.75	+ 17	+ 82	—14	23.46	+6	38.8
	7		17.7643	23.6893	+ 25	— .8	— .3	40 38 52.66	— 2 29.74	+ 7	— 17	— 4	22.78	+7	38.3
	8		24.9413	14.2900	— 25	+2.1	+1.6	40 40 51.79	— 4 29.00	+ 11	+ 56	— 9	23.37	+6	
Dec. 5	9		13.9437	25.5230	— 17	+1.1	+1.3	40 31 30.45	+ 4 52.46	+ 7	+ 36	+11	23.45	+6	
	II 10		8.6423ii	30.1400iv	— 6	0	0	40 27 18.53	+ 9 3.03	+1.01	0	+15	22.72	+6	37.8
	3	R	28.8523	11.6080	+ 23	+1.2	+ .3	40 29 5.77	+ 7 15.69	+ 3	+ 24	+14	21.87	+7	31.5
	5		29.5650	11.7630	+ 69	—1.0	— .9	40 28 52.50	+ 7 29.90	+ 2	— 28	+13	22.27	+7	31.2
	6		9.5543ii	29.7740iv	0	+ .3	0	40 27 50.85	+ 8 30.80	+1.01	+ 5	+14	22.85	+8	
	7		27.8103iv	11.9513ii	+ 3	—1.3	—1.8	40 29 41.30	+ 6 40.64	+1.02	— 45	+12	22.63	+8	
	8		12.8107	27.9417	+ 34	— .8	0	40 42 45.75	— 6 22.3	+ 11	— 13	—11	23.29	+8	
	9		21.7767	19.4033	+ 10	— .5	—1.6	40 37 23.30	— 59.99	+ 13	— 29	— 2	23.13	+6	30.6
	III 1		24.6607	16.3993	+ 26	— .3	—1.5	40 39 51.87	— 3 28.77	+ 8	— 24	— 6	22.88	+8	
	2		32.4173iv	3.7707ii	— 96	—2.9	—1.6	40 24 18.40	+12 3.45	+1.01	— 70	+21	22.37	+7	
	3		15.5893	26.5980	+ 71	—3.4	—2.8	40 41 1.99	— 4 38.29	+ 10	— 94	— 8	22.78	+7	29.9
	4		14.2750	25.9713	+ 9	— .8	— .4	40 41 18.67	— 4 55.50	+ 9	— 18	— 8	23.00	+7	
	5		22.6020	18.6673	+ 16	+ .2	— .6	40 38 2.60	— 1 39.44	+ 8	— 4	— 3	23.17	+7	
	6		13.7920	27.7703	+ 67	—4.1	—3.9	40 42 17.57	— 5 53.30	+ 16	—1.20	—14	23.09	+6	
	7		22.5347	16.6580	— 15	—1.6	—4.0	40 38 52.89	— 2 28.43	+ 7	— 79	— 4	23.70	+7	28.9b
	8		15.9253	26.5363	+ 75	—2.8	—3.8	40 40 52.04	— 4 28.25	+ 11	— 96	— 9	22.85	+6	
	9		27.2727	15.6840	+103	—3.8	—4.0	40 31 30.71	+ 4 53.02	+ 7	—1.16	+11	22.75	+6	
	10		31.3463iv	9.8207ii	+ 5	+ .1	— .7	40 27 18.80	+ 9 3.80	+1.01	— 7	+15	23.69	+6	29.4
	VI 12	R	10.0173	31.6677	+108	—3.2	—2.4	40 27 17.22	+ 9 7.22	+ 2	— 85	+17	23.78	—4	
	VII 1		27.8333	13.0030	+ 36	+1.3	—1.3	40 30 8.70	+ 6 14.75	+ 4	+ 5	+13	23.67	—4	
	2		15.7893	24.3733	+ 6	—2.3	—1.2	40 40 0.29	— 3 36.87	+ 8	— 54	— 7	22.89	—5	
	3		21.5310	18.1180	— 4	—1.6	—2.0	40 34 57.65	+ 1 26.21	+ 5	— 53	+ 3	23.41	—5	25.9
	4		24.8580	16.1477	+ 26	+ .3	+ .6	40 40 3.12	— 3 40.12	+ 13	+ 12	— 9	23.16	—5	
	5		28.6377	10.9187	— 25	—1.5	+ .4	40 28 55.39	+ 7 27.58	+ 1	— 20	+13	22.91	—5	
	6		28.0653	14.0530	+ 88	— .6	— .9	40 42 17.47	— 5 54.22	+ 10	— 21	—10	23.04	—6	25.8
	7		25.9453	14.3863	+ 11	—2.4	—2.5	40 41 15.98	— 4 52.04	+ 9	— 73	— 8	23.22	—6	
	8		19.2800	21.4083	+ 3	— .8	—1.6	40 37 17.57	— 53.78	+ 6	— 34	— 2	23.49	—6	25.4
	9		27.6157	14.9137	+ 95	+ .6	+1.4	40 31 2.59	+ 5 21.14	+ 6	+ 28	+11	24.18	—5	
	10		20.2823	20.9737	0	— .8	— .8	40 36 41.44	— 17.46	+ 6	— 24	— 1	23.79	—6	
	VIII 1		21.4160	18.5030	— 1	— .6	—1.3	40 37 37.32	— 1 13.59	+ 7	— 27	— 2	23.51	—6	24.7
Dec. 9	2		15.4433	27.8943	+123	— .1	— .8	40 31 8.78	+ 5 14.87	+ 7	— 12	+12	23.72	—5	
	VII 1	D	10.5773	25.4183	—176	+ .3	+ .4	40 30 8.60	+ 6 14.47	+ 4	+ 10	+13	23.34	—4	29.1
	2		23.2840	14.7170	— 50	— .1	— .2	40 40 0.15	— 3 36.30	+ 8	— 4	— 7	23.82	—5	
	3		16.0450	19.4757	— 44	— .3	— .8	40 34 57.46	+ 1 26.56	+ 5	— 15	+ 3	23.95	—5	29.3
	5		14.5120	32.2280	+352	— .3	— .8	40 28 55.09	+ 7 28.44	+ 1	— 15	+13	23.52	—5	
	6		14.1753	28.1557	+ 93	—1.0	—2.4	40 42 17.09	— 5 53.42	+ 9	— 48	—10	23.18	—6	
	7		13.6737	25.2077	— 39	—2.6	—3.0	40 41 15.52	— 4 51.28	+ 9	— 83	— 8	23.42	—6	28.6
	8		22.9347	20.8337	+ 22	—1.2	—1.7	40 37 17.05	— 53.14	+ 6	— 42	— 2	23.53	—6	27.8
	10		20.6143	19.9340	0	+ .4	+ .8	40 36 40.79	— 17.18	+ 6	+ 17	— 1	23.83	—6	28.2

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 10	II 4	D	21.0663	16.7940	— 27	+ .8	+ .5	40 38 10.24	— 1 47.86	+ 11	+ 20	— 4	40 36 22.65	+6	
	5		11.8393	29.6693	+ 79	— .3	— .8	40 28 52.11	+ 7 30.63	+ 2	— 15	+13	22.74	+7	31.2
	6		29.8993iv	9.6520ii	0	—2.1	—1.6	40 27 50.55	+ 8 31.50	+1.01	— 56	+14	22.64	+7	
	7		12.2753ii	28.0700iv	— 5	+4.6	+5.3	40 29 41.05	+ 6 39.00	+1.02	+1.47	+12	22.66	+7	30.4
	8		27.5123	12.3783	— 4	— .1	—1.1	40 42 45.58	— 6 22.31	+ 11	— 15	—11	23.12	+7	
	III 1		16.5427	24.7857	+ 30	—1.5	—1.2	40 39 51.86	— 3 28.31	+ 8	— 41	— 6	23.16	+7	30.2
	2		8.4803ii	37.0827iv	+141	+1.6	+ .9	40 24 18.46	+12 2.92	+1.01	+ 39	+21	22.99	+7	
	3		25.6640	14.5843	+ 8	+2.0	+2.0	40 41 2.11	— 4 39.92	+ 10	+ 60	— 8	22.81	+7	
	4		25.8787	14.1643	+ 2	— .1	— .6	40 41 18.86	— 4 55.94	+ 9	— 9	— 8	22.84	+7	30.0
	5		17.0000	20.9463	— 24	—1.4	—1.4	40 38 2.89	— 1 39.63	+ 8	— 42	— 3	22.89	+7	
	6		26.5843	12.5360	— 38	+ .6	+ .7	40 42 17.93	— 5 54.80	+ 17	+ 19	—14	23.35	+6	29.7
	7		17.9987	23.9307	+ 33	—1.8	—1.2	40 38 53.30	— 2 29.94	+ 7	— 46	— 4	22.93	+7	29.6
	8		24.1550	13.4850	— 74	+ .8	+ .7	40 40 52.53	— 4 29.36	+ 11	+ 22	— 9	23.41	+6	
	9		15.0920	26.6523	+ 59	0	—1.4	40 31 31.22	+ 4 52.19	+ 8	— 18	+11	23.42	+6	
	10		11.4597ii	32.9440iv	+ 18	+ .6	— .8	40 27 19.33	+ 9 2.79	+1.01	— 0	+15	23.28	+6	29.9
Dec. 11	VII 4	R	25.8620	17.2083	+ 77	—3.3	—3.0	40 40 2.81	— 3 38.81	+ 13	— 95	— 9	23.09	—5	26.3
	5		29.1893	11.4367	+ 33	—1.7	—1.9	40 28 55.01	+ 7 28.57	+ 1	— 53	+13	23.19	—6	
	6		26.9850	12.9887	0	— .8	— .9	40 42 16.98	— 5 53.59	+ 10	— 25	—10	23.14	—6	27.4
	7		26.4723	14.9190	+ 48	— .5	—1.8	40 41 15.36	— 4 51.99	+ 9	— 31	— 8	23.07	—6	
	8		19.2790	21.4050	+ 6	—3.5	—2.0	40 37 16.87	— 53.73	+ 6	— 85	— 2	22.33	—6	27.0
	9		27.8337	15.0980	+111	—1.0	—1.7	40 31 1.82	+ 5 22.02	+ 6	— 39	+11	23.62	—6	
	10		20.6600	21.3293	+ 3	—1.3	—1.1	40 36 40.55	— 16.91	+ 6	— 36	— 1	23.33	—6	
	VIII 1		21.5297	18.6433	+ 1	— .5	—1.8	40 37 36.34	— 1 12.92	+ 7	— 31	— 2	23.16	—6	
	2		15.3047	27.7870	+115	0	— .6	40 31 7.74	+ 5 15.63	+ 7	— 7	+12	23.49	—6	
	3		14.9387	26.9270	+ 65	—3.0	—2.0	40 41 26.87	— 5 3.03	+ 9	— 77	— 9	23.07	—6	
	4		14.7850	23.4397	— 44	— .5	—1.6	40 32 45.26	+ 3 38.53	+ 3	— 29	+ 6	23.59	—6	26.7
	5		30.9377iv	10.9443ii	0	—3.0	—1.9	40 27 57.94	+ 8 25.10	+1.04	— 75	+16	23.49	—6	
Dec. 12	6		20.4923	23.3117	+ 31	+ .4	+ .3	40 37 34.33	— 1 11.31	+ 8	+ 12	— 2	23.20	—6	26.0
	II 5	R	28.9580	11.1233	— 4	— .5	—1.0	40 28 51.87	+ 7 30.55	+ 1	— 21	+13	22.35	+7	33.0
	6		9.1423ii	29.3803iv	0	+ .9	0	40 27 50.33	+ 8 31.26	+ 97	+ 15	+14	22.85	+7	
	7		28.2790iv	12.4310ii	— 9	+1.0	0	40 29 40.85	+ 6 40.33	+ 98	+ 17	+12	22.45	+7	
	8		14.0407	29.1510	+142	— .7	+ .3	40 42 45.42	— 6 22.08	+ 11	— 7	—11	23.27	+7	33.2
	9		21.5193	19.1470	+ 4	+ .1	— .9	40 37 23.16	— 59.94	+ 13	— 10	— 2	23.23	+6	
	III 1		23.9220	15.6830	— 10	0	— .2	40 39 51.75	— 3 28.11	+ 8	— 2	— 6	23 64	+7	32.6
	2		32.0733iv	3.4307ii	—115	+ .3	— .4	40 24 18.37	+12 3.28	+ 97	0	+21	22.83	+7	
	3		15.1537	26.1910	+ 45	+ .4	+ .2	40 41 2.04	— 4 38.94	+ 10	+ 9	— 8	23.21	+7	
	4		14.1767	25.8763	+ 2	— .2	— .6	40 41 18.82	— 4 55.56	+ 9	— 11	— 8	23.16	+7	32.6
	6		15.2990	29.2927	+189	— .6	— .3	40 42 17.96	— 5 53.98	+ 16	— 14	—14	23.86	+6	32.5
	7		21.3000	15.3603	— 58	+ .4	— .7	40 38 53.36	— 2 29.90	+ 7	— 2	— 4	23.47	+7	
	8		15.4403	26.0660	+ 47	—2.9	—2.3	40 40 52.61	— 4 28.55	+ 11	— 72	— 9	23.36	+6	
	9		27.6443	16.1210	+129	+ .2	+1.1	40 31 31.31	+ 4 51.43	+ 7	+ 17	+11	23.09	+6	
Dec. 15	10		31.5383iv	10.0710ii	+ 6	— .2	— .2	40 27 19.45	+ 9 2.32	+ 97	— 6	+15	22.83	+6	31.5
	VII 4	D	15.4810	24.2010	— 7	+1.7	+1.2	40 40 2.59	— 3 40.27	+ 13	+ 44	— 9	22.80	—5	33.4
	5		12.5773	30.3193	+151	+ .6	— .1	40 28 54.75	+ 7 28.58	+ 1	+ 8	+13	23.55	—6	
	7		13.8523	25.4083	— 26	+ .3	+ .5	40 41 14.96	— 4 51.87	+ 9	+ 11	— 8	23.21	—6	
Dec. 17	VII 4	D	14.2723	22.9543	— 71	— .4	— .8	40 40 2.44	— 3 39.15	+ 13	— 17	— 9	23.16	—5	30.2
	5		11.6707	29.4313	+ 57	—1.2	—1.1	40 28 54.58	+ 7 28.82	+ 1	— 34	+13	23.20	—6	
	6		12.6280	26.6247	— 32	— .1	— .2	40 42 16.48	— 5 53.51	+ 10	— 4	—10	22.93	—6	29.5
	7		14.3947	25.9227	+ 10	—1 0	— .6	40 41 14.76	— 4 51 25	+ 9	— 24	— 8	23.28	—6	
	8		21.2660	19.1790	+ 4	—1.5	— .7	40 37 16.20	— 52.74	+ 6	— 34	— 2	23.16	—6	29.6
	9		14.2013	26.9537	+ 45	— .1	— .8	40 31 1.09	+ 5 22.28	+ 6	— 12	+11	23.42	—6	
	10		21.4510	20.7657	+ 3	— .2	+ .1	40 36 39.74	— 17.32	+ 6	— 2	— 1	22.45	—6	29.0
	VIII 1		18.0190	20.8850	— 9	—1.7	—1.9	40 37 35.45	— 1 12.38	+ 7	— 53	— 2	22.59	—6	28.8
	2		27.1297	14.6197	+ 63	—1.1	0	40 31 6.80	+ 5 16.20	+ 7	— 19	+12	23.00	—6	29.4
	3		26.4030	14.3970	+ 28	+2.0	+ .8	40 41 25.80	— 5 3.37	+ 9	+ 44	— 9	22.87	—7	

1892	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
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Dec. 17	VIII 4		24.9103	16.2577	+ 29	—1.1	— .6	40 32 44.06	+ 3 38.66	+ 3	— 26	+ 6	40 36 22.55	—7	
	5		9.1500ii	29.1537iv	0	— .3	—1.1	40 27 56 80	+ 8 25.35	+ 93	— 19	+16	23.05	—6	29.3
	6		21.4763	18.6883	+ 2	+2.1	+1.0	40 37 33.11	— 1 10 44	+ 8	+ 49	— 2	23.22	—6	
	7		28.3923iv	12.1887ii	— 7	— .8	— .4	40 29 32.21	+ 6 49.33	+ 92	— 18	+12	22.40	—6	30.0
	8		19.4690	20.4453	+ 1	— .1	— .1	40 35 58.58	+ 24.66	+ 10	— 3	+ 1	23.32	—6	29.5
Dec. 18	9		12.6523	26.6467	— 29	— .5	— .3	40 30 29.64	+ 5 53.46	+ 5	— 12	+11	23.14	—6	29.4
	VII 8	R	19.2960	21.3933	+ 6	—1.1	—1.4	40 37 16.08	— 53.00	+ 6	— 37	— 2	22.75	—6	32.0
	9		27.3747	14.6163	+ 76	—1.6	—1.2	40 31 0.95	+ 5 22.50	+ 6	— 43	+11	23.19	—6	31.7
	10		21.4873	22.1270	+ 8	—1.8	—2.6	40 36 39.59	— 16.18	+ 6	— 64	— 1	22.82	—6	
	VIII 1		22.8010	19.9737	+ 26	+ .1	— .6	40 37 35.27	— 1 11.49	+ 7	— 6	— 2	23.77	—6	
	2		14.5030	27.0053	+ 55	+ .1	— .2	40 31 6.62	+ 5 15.97	+ 7	— 1	+12	22.77	—6	31.8a
	3		14.8567	26.8200	+ 60	— .2	+ .6	40 41 25.60	— 5 2 37	+ 9	+ 4	— 9	23.27	—7	a
	4		16.1890	24.8667	+ 28	0	— .2	40 32 43.84	+ 3 39.29	+ 3	— 2	+ 6	23.20	—7	
	5		30.6300iv	10.6303ii	0	— .8	+ .1	40 27 56.58	+ 8 25.24	+ 89	— 12	+16	22.75	—6	32.4
	6		17.5950	20.3653	— 17	— .6	+ .1	40 37 32.88	— 1 9.94	+ 8	— 8	— 2	22.92	—6	
	7		12.0950ii	28.3330iv	— 4	— .3	—2.1	40 29 31.96	+ 6 50.20	+ 88	— 32	+12	22.84	—7	32.0
Dec. 20	8		22.5363	21.5700	+ 11	—1.5	— .1	40 35 58.39	+ 24.44	+ 11	— 27	+ 1	22.68	—6	32.0
	II 8	D	28.0407	12.9657	+ 44	+ .4	— .4	40 42 44.94	— 6 20.96	+ 11	+ 2	—11	24.00	+6	26.5
	9		21.4307	23.7820	+ 37	—1.2	—2.1	40 37 22.92	— 59.50	+ 13	— 47	— 2	23.06	+6	
	III 1		17.2663	25.5073	+ 67	—1.2	—1.9	40 39 51.46	— 3 28.36	+ 8	— 45	— 6	22.67	+7	
	2		8.5023ii	37.1207iv	+142	—1.0	—1.8	40 24 18.17	+12 3.36	+ 86	— 40	+21	22.20	+7	25.9
	3		26.1667	15.1103	+ 42	+ .2	— .2	40 41 1.94	— 4 39.43	+ 10	+ 1	— 8	22.54	+7	
	4		26.6357	14.9420	+ 52	— .6	—1.0	40 41 18.81	— 4 55.55	+ 9	— 23	— 8	23.04	+7	25.6
	5		17.7520	21.7430	— 7	+ .7	+ .1	40 38 3.03	— 1 40.80	+ 8	+ 13	— 3	22.41	+6	24.8
	6		26.9613	12.8680	— 7	— .4	—1.2	40 42 18.18	— 5 56.02	+ 17	— 22	—14	21.97	+6	
	7		17.6463	23.5840	+ 21	—2.7	—2.0	40 38 53.65	— 2 30.06	+ 8	— 72	— 4	22.90	+7	24.1
	8		25.1803	14.5153	— 11	—1.4	—2.5	40 40 53.02	— 4 29.41	+ 11	— 56	— 9	23.07	+6	
	9		14.7703	26.3080	+ 38	— .6	—1.3	40 31 31.77	+ 4 51.57	+ 7	— 27	+11	23.25	+6	
Dec. 22	10		8.3123ii	29.7987iv	— 8	—2.2	—2.6	40 27 19.94	+ 9 2.80	+ 86	— 71	+15	23.04	+6	23.2
	VII 9	D	12.6607	25.4550	— 72	— .8	—1.2	40 31 0.52	+ 5 23.06	+ 6	— 29	+11	23.46	—6	20.5b
Dec. 23	10		20.1823	19.5553	0	—1.2	—2.6	40 36 39.10	— 15.84	+ 6	— 54	— 1	22.77	—6	
	III 1	R	24.3543	16.1130	+ 12	+ .3	— .2	40 39 51.26	— 3 28.23	+ 8	+ 2	— 6	23.07	+7	24.0
	2		34.0690iv	5.4463ii	— 12	+1.6	+1.4	40 24 18.02	+12 3.08	+ 86	+ 45	+21	22.62	+6	
	3		15.1277	26.1287	+ 40	—3.1	—2.0	40 41 1.83	— 4 38.02	+ 10	— 79	— 8	23.04	+6	
	4		14.3437	26.0487	+ 10	+ .5	+ .2	40 41 18.75	— 4 55.74	+ 9	+ 11	— 8	23.13	+7	23.7
	5		23.3003	19.3613	+ 31	—2.0	—1.9	40 38 3.04	— 1 39.60	+ 8	— 58	— 3	22.91	+6	
	6		13.6520	27.6883	+ 56	— .1	— .6	40 42 18.30	— 5 54.74	+ 17	— 9	—14	23.50	+6	
	7		22.8130	16.8650	— 6	— .9	—2.5	40 38 53.74	— 2 30.25	+ 7	— 48	— 4	23.04	+7	23.5
Dec. 25	8		15.2200	25.8947	+ 34	0	— .5	40 40 53.18	— 4 29.77	+ 11	— 6	— 9	23.37	+6	
	VIII 1	D	21.2620	24.0663	+ 42	—1.4	—1.5	40 37 34.47	— 1 10.96	+ 6	— 43	— 2	23.12	—7	14.8
	2		26.5417	13.9587	+ 19	—2.0	—1.9	40 31 5.69	+ 5 17.96	+ 11	— 58	+12	23.30	—6	b
	4		24.7530	15.9897	+ 21	—3.7	—2.4	40 32 42.61	+ 3 41.46	+ 6	— 94	+ 6	23.25	—7	14.8
	5		10.2310ii	30.2740iv	0	— .1	—1.3	40 27 55.37	+ 8 26.39	+ 96	— 18	+16	22.70	—7	
	7		28.0273iv	11.7537ii	+ 2	— .5	+2.1	40 29 30.55	+ 6 51.16	+ 93	+ 18	+12	22.94	—7	
	9		11.9110	25.9937	— 88	+ .6	+ .1	40 30 27.89	+ 5 55.58	+ 9	+ 11	+11	23.78	—7	14.0
	10		37.6187iv	10.2210ii	+171	— .5	—1.5	40 47 57.32	—11 32.64	— 80	— 28	—23	23.37	—6	
Dec. 26	11		13.7323	28.8560	+115	+ .3	+1.7	40 42 45.12	— 6 22.39	+ 5	+ 27	—12	22.92	—7	14.4
	III 2	D	2.9480ii	31.6717iv	—138	—2.3	—1.8	40 24 17.74	+12 5.35	+ 95	— 62	+21	23.63	+6	17.3
	3		24.6590	13.5933	— 56	+2.3	+2.0	40 41 1.59	— 4 39.43	+ 6	+ 65	— 8	22.79	+6	
	4		25.0327	13.3457	— 57	—1.4	— .2	40 41 18.54	— 4 55.13	+ 5	— 26	— 8	23.12	+7	16.6
	5		18.6900	22.6447	+ 16	—1.1	— .8	40 38 2.91	— 1 39.95	+ 7	— 29	— 3	22.71	+6	16.5
	6		26.2063	12.1443	— 71	+1.1	+ .2	40 42 18.23	— 5 55.09	+ 12	+ 21	—14	23.33	+5	
	7		18.0340	24.0307	+ 35	+ .8	+2.4	40 38 53.68	— 2 31.59	+ 5	+ 44	— 4	22.54	+6	16.2
	8		25.2023	14.5423	— 9	— .4	— .6	40 40 53.18	— 4 29.31	+ 7	— 14	— 9	23.71	+6	16.0
	9		13.3763	24.8787	— 59	+1.4	+ .9	40 31 31.97	+ 4 50.46	+ 11	+ 35	+11	23.00	+5	

1892	Pair	P	Micrometer		C	Levels A	Levels B	⅛(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 26	III 10	D	9.0527ii	30.5107iv	+ 1	—1.2	— .2	40 27 20.15	+ 9 2.14	+ 93	— 23	+15	40 36 23.14	+6	16.2
	IV 1		20.8203	18.0490	— 9	+ .3	+ .2	40 35 12.74	+ 1 9.99	+ 8	+ 7	+ 2	22.90	+5	15.6
	2		15.3827	26.8157	+ 74	— .2	+ .8	40 41 11.91	— 4 49.04	+ 5	+ 7	— 8	22.91	+6	14.5
	3		28.3280	8.7093	—172	+1.0	+ .3	40 44 37.47	— 8 15.23	+ 7	+ 21	—17	22.35	+5	
	4		28.1710	9.5270	—127	+ .4	+ .2	40 44 14.11	— 7 50.90	+ 4	+ 9	—14	23.20	+5	
	5		16.9187	20.9623	— 26	+1.5	+ .9	40 34 40.38	+ 1 42.09	+ 5	+ 37	+ 3	22.92	+5	15.0
	8		14.0260	26.6030	+ 23	+ .7	+1.7	40 41 39.85	— 5 17.82	+ 7	+ 34	—11	22.33	+4	15.0
	9		25.4020	12.6153	— 77	+1.7	+1.5	40 30 59.46	+ 5 22.86	+ 8	+ 48	+10	22.98	+4	
Dec. 27	10		27.9003iv	6.5590ii	— 21	— .8	+ .2	40 27 22.06	+ 8 59.13	+ 95	— 11	+17	22.20	+3	14.4
	III 1	R	23.1600	14.9160	— 47	+1.9	+1.7	40 39 50.83	— 3 28.17	+ 5	+ 54	— 6	23.19	+6	23.0
	2		34.1957iv	5.5473ii	— 7	+1.8	+ .8	40 24 17.65	+12 3.76	+ 95	+ 41	+21	22.98	+6	22.5
	3		15.3637	26.4067	+ 58	+3.3	+2.7	40 41 1.51	— 4 39.14	+ 6	+ 91	— 8	23.26	+6	
	4		13.8063	25.5037	— 24	—1.4	— .5	40 41 18.46	— 4 55.46	+ 5	— 30	— 8	22.67	+6	*a*
	5		22.4617	18.5387	+ 12	— .6	— .3	40 38 2.86	— 1 39.14	+ 7	— 14	— 3	23.62	+6	21.6*a*
	6		15.3773	29.4153	+198	+1.4	+ .9	40 42 18.20	— 5 55.16	+ 12	+ 35	—14	23.37	+5	
	7		22.1197	16.1687	— 32	— .6	—1.5	40 38 53.65	— 2 30.27	+ 5	— 29	— 4	23.10	+6	21.2
	8		15.5407	26.2110	+ 55	+ .4	+ .2	40 40 53.16	— 4 29.72	+ 7	+ 9	— 9	23.51	+6	21.0
	10		31.9743iv	10 5440ii	+ 10	— .5	+1.0	40 27 20.15	+ 9 1.44	+ 93	+ 4	+15	22.71	+6	20.6
	IV 1		20.1190	22.9037	+ 27	— .7	— .5	40 35 12 76	+ 1 10.42	+ 8	— 18	+ 2	23.10	+5	
	2		26.7907	15.3800	+ 74	+ .5	— .3	40 41 11.92	— 4 48.47	+ 5	+ 4	— 8	23.46	+6	20.3
	3		12.2497ii	31.7953iv	— 5	+ .4	+1.6	40 44 37.51	— 8 13.79	— 79	+ 27	—17	23.03	+5	
	4		12.5717ii	31.1833iv	— 17	+ .8	+1.3	40 44 14.15	— 7 50.16	— 82	+ 30	—14	23.33	+5	19.9
	5		22.7950	18.7237	+ 19	—1.6	— .3	40 34 40.43	+ 1 42.91	+ 5	— 31	+ 3	23.11	+5	19.4
	VIII 1	R	22.7617	19.9903	+ 25	—2.3	—2.3	40 37 34.28	— 1 10.08	+ 6	— 68	— 2	23.56	—7	15.5
	2		13.9673	26.5440	+ 19	—1.7	— .5	40 31 5.50	+ 5 17.80	+ 11	— 35	+12	23.18	—6	
	3		14.0667	25.9720	— 0	—1.5	+ .5	40 41 24.32	— 5 0.77	+ 5	— 19	— 9	23.32	—7	*a*
	4		16.1380	24.8660	+ 26	+ .4	— .2	40 32 42.34	+ 3 40.58	+ 6	+ 4	+ 6	23.08	—7	
	5		31.4337iv	11.3777ii	— 0	+ .8	+ .6	40 27 35.10	+ 8 26.72	+ 96	+ 21	+16	23.15	—7	
	6		19.9743	22.7113	+ 24	+ .1	+ .5	40 37 31.29	— 1 9.21	+ 7	+ 8	— 2	22.21	—7	
	7		14.1240ii	30.4230iv	— 49	+1.3	— .6	40 29 30.23	+ 6 51.67	+ 93	+ 14	+12	23.09	—7	
	8		23.5360	22.5327	+ 19	+ .8	+2.5	40 35 56.69	+ 25.40	+ 10	+ 46	+ 1	22.66	—6	16.2
	9		28.7710	14.7037	+145	—2.5	— .4	40 30 27.56	+ 5 55.77	+ 9	— 47	+11	23.06	—7	15.9
	10		5.8317ii	33.2423iv	— 21	—1.3	+ .3	40 47 56.97	—11 32.48	— 80	— 18	—23	23.28	—7	15.4
	11		29.4720	14.4183	+172	—2.0	—3.3	40 42 44.73	— 6 20.77	+ 4	— 76	—12	23.12	—7	
	IX 1		28.6237	12.6810	+ 61	— .5	—1.0	40 29 39.92	+ 6 42.94	+ 8	— 21	+13	22.86	—7	14.3
Dec. 28	III 1	D	16.1483	24.3770	+ 14	+ .3	+ .5	40 39 50.73	— 3 27.93	+ 5	+ 11	— 6	22.90	+6	22.4*b*
	2		2.9940ii	31.6793iv	—136	—1.0	— .1	40 24 17.56	+12 4.38	+ 95	— 18	+21	22.92	+6	
	3		25.2567	14.2150	— 18	+1.7	+ .3	40 41 1.41	— 4 38.91	+ 6	+ 33	— 8	22.81	+6	20.9
	5		18.6593	22.6120	+ 16	— .2	— .2	40 38 2.82	— 1 39.90	+ 7	— 6	— 3	22.90	+6	
	6		25.4430	11.3667	—133	+ .5	— .1	40 42 18.17	— 5 55.30	+ 12	+ 7	—14	22.92	+5	20.2
	7		18.2230	24 1590	+ 41	—2.9	—1.3	40 38 53.62	— 2 30.08	+ 6	— 66	— 4	22.90	+6	19.6
	8		25.3013	14.6087	— 4	+ .8	+ .8	40 40 53.16	— 4 30.13	+ 7	+ 24	— 9	23.25	+6	
	9		14.2467	25.7783	0	— .8	—1.4	40 31 31.98	+ 4 51.34	+ 11	— 31	+11	23.23	+5	
	10		8.8283ii	30.2823iv	— 3	— .9	—1.9	40 27 20 15	+ 9 2.01	+ 93	— 40	+15	22.84	+6	
	IV 1		21.8627	19.0807	+ .7	— .2	— .2	40 35 12.78	+ 1 10.30	+ 8	— 6	+ 2	23.12	+5	18.8
	2		15.0583	26.5040	+ 51	—1.2	+ .8	40 41 11.95	— 4 49.29	+ 5	— 10	— 8	22.53	+6	18.3
	3		30.3813iv	10.8533ii	0	— .8	— .1	40 44 37.53	— 8 13.36	— 79	— 15	—17	23.06	+5	
	4		29.3737iv	10.7757ii	— 1	+ .1	— .7	40 44 14.19	— 7 49.87	— 82	— 7	—14	23.29	+5	17.9
	5		19.3473	23.4040	+ 32	— .1	— .2	40 34 40.48	+ 1 42.57	+ 5	— 4	+ 3	23.09	+5	17.5
	6		16.3940	23.6553	+ 1	— .6	—2.2	40 39 27.00	— 3 3.45	+ 4	— 38	— 5	23.16	+5	
	7		6.3193ii	31.6793iv	— 32	+1.2	+ .8	40 25 39.97	+10 40.63	+ 98	+ 31	+24	22.13	+4	
	8		12.9567	25.5387	— 56	+1.9	+3.8	40 41 39.99	— 5 17.74	+ 7	+ 81	—11	23.02	+4	
	9		25.8493	13.0393	— 45	+ .2	+ .2	40 30 59.60	+ 5 23.52	+ 8	+ 6	+10	23.36	+4	16.7
	VIII 3	D	26.8190	14.9313	+ 61	—2.5	—3.6	40 41 24.19	— 5 0.49	+ 5	— 89	— 9	22.77	—7	13.0
	4		25.4100	16.6520	+ 52	—1.7	—1.1	40 32 42.18	+ 3 41.41	+ 6	— 43	+ 6	23.28	—7	11.9

1892	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
Dec.								° ′ ″					° ′ ″		
28	VIII 5	D	10.1300ii	30.2213iv	0	— .7	— .9	40 27 34.96	+ 8 27.62	+ 96	— 23	+16	40 36 23.47	—7	10.9
	6		21.6720	18.9803	+ 6	—1.3	—2.4	40 37 31.13	— 1 8.03	+ 7	— 53	— 2	22.62	—7	
	7		28.3017iv	11.9840ii	— 3	—2.9	—1.9	40 29 30.07	+ 6 52.27	+ 93	— 74	+12	22.65	—7	
	9		11.1250	25.2353	—153	— .7	—2.3	40 30 27.39	+ 5 56.13	+ 9	— 42	+11	23.30	—7	11.8
	10		29.3470iv	1.8970ii	—192	— .6	— .8	40 47 56.79	—11 33.06	— 80	— 20	—23	22.50	—7	11.3
1893	11		13.9483	29.0283	+132	—1.6	— .5	40 42 44.52	— 6 21.34	+ 4	— 34	—12	22.76	—7	
Jan.	IX 1		11.8000	27.7660	— 20	—1.5	—2.4	40 29 39.71	+ 6 43.35	+ 8	— 56	+13	22.71	—7	10.6
3	VIII 3	R	15.0147	26.8593	+ 62	—1.6	—1.8	40 41 23.33	— 4 59.41	+ 5	— 50	— 9	23.38	—7	15.7
	4		16 3560	25.1347	+ 37	—2.2	—1.8	40 32 41.19	+ 3 41.89	+ 7	— 60	+ 6	22.61	—7	
	5		32.6240iv	12.5067ii	0	— .2	— .6	40 27 53.97	+ 8 28.26	+ 96	— 11	+16	23.24	—7	
	6		19.9923	22.6327	+ 23	—2.0	— .8	40 37 30.06	— 1 6.76	+ 7	— 44	— 2	22.91	—7	
	7		11.6740ii	28.0240iv	+ 3	— .8	—1.1	40 29 28.93	+ 6 53.09	+ 93	— 27	+12	22.80	—7	17.0
	8		21.9140	20.8097	+ 8	—3.7	—2.1	40 35 55.40	+ 27.92	+ 10	— 90	+ 1	22.53	—7	
	9		27.8340	13.7160	+ 63	— .9	— .2	40 30 26.18	+ 5 56.85	+ 9	— 18	+11	23.05	—7	17.0
	10		9.7310ii	37.0770iv	+147	— .1	+ .2	40 47 55.50	—11 31.26	— 80	+ 1	—23	23.22	—7	
	11		29.2703	14.2627	+156	— .2	— 8	40 42 43.12	— 6 19.56	+ 4	— 14	—11	23.35	—8	
Jan.	IX 1		28.2030	12.2333	+ 20	— .2	0	40 29 38.30	+ 6 43.52	+ 8	— 3	+13	22.00	—7	16.6
7	VIII 4	D	25.4233	16.6127	+ 51	—1.2	—2.6	40 32 40.81	+ 3 42.73	+ 7	— 54	+ 6	23.13	—7	16.4
	6		19.5947	16.9727	— 25	—1.4	—2.0	40 37 29.63	— 1 6.18	+ 7	— 50	— 2	23.00	—7	16.0
	7		28.3637iv	12.0083ii	— 4	0	— .2	40 29 28.38	+ 6 53.21	+ 93	— 2	+12	22.62	—8	16.5
	8		19.4647	20.5967	0	— .8	—2.0	40 35 54.91	+ 28.60	+ 10	— 40	+ 1	23.22	—7	
Jan.	11		13.9393	28.9560	+125	+ .6	— .3	40 42 42 42	— 6 19.71	+ 4	+ 6	—11	22.70	—8	16.0
13	III 6	R	15.2510	29.2470	+185	— .4	—1.4	40 42 17.65	— 5 54.08	+ 11	— 25	—10	23.33	+4	14.0
	7		22.9967	17.0877	+ 1	—2.2	—3.5	40 38 52.98	— 2 29.29	+ 6	— 82	— 4	22.89	+5	13.4
	8		16.2240	26.8410	+ 96	— .9	—1.8	40 40 52.90	— 4 28.48	+ 7	— 38	— 8	24.03	+5	13.2
	10		31.9907iv	10.5363ii	+ 12	— .6	—1.5	40 27 20.01	+ 9 2.09	+ 94	— 30	+15	22.89	+5	
	IV 1		19.7897	22.6060	+ 20	—2.9	—2.4	40 35 13.02	+ 1 11.21	+ 8	— 80	+ 2	23.53	+5	12.9
	2		25.4753	14.0427	— 16	—1.0	—2.7	40 41 12.31	— 4 48.81	+ 5	— 52	— 8	22.95	+5	
	3		10.8807ii	30.4633iv	0	— .2	+ .2	40 44 38.09	— 8 14.77	— 79	— 1	—17	22.35	+5	13.0
	4		10.3977ii	29.0047iv	— 1	+ .8	+ .9	40 44 14.89	— 7 50.11	—1.10	+ 25	—14	23.79	+5	12.8
	5		23.0990	27.1157	+120	+ .3	+1.1	40 34 41.35	+ 1 41.78	+ 5	+ 19	+ 3	23.40	+5	
	6		23.3407	15.9843	— 13	+2.7	+1.5	40 39 27.99	— 3 5.83	+ 5	+ 65	— 5	22.81	+5	13.0
	8		28.3770	15.8753	+159	—3.5	—3.2	40 41 41.23	— 5 16.26	+ 7	—1.01	—11	23.92	+4	
	9		14.4763	27.2663	+ 68	—3.2	—3.9	40 31 0.95	+ 5 23.31	+ 8	—1.05	+10	23.39	+4	
	10		10.0417ii	31.3917iv	+ 5	— .5	— .9	40 27 23.63	+ 8 59.44	+ 95	— 20	+17	23.99	+4	13 0
Jan.															
16	III 7	D	18.1587	24.0760	+ 40	— .2	+ .5	40 38 52.84	— 2 29.61	+ 6	+ 3	— 4	23.28	+5	10.6
	9		16.1487	27.6910	+132	—2.2	—3.5	40 31 31.88	+ 4 51.96	+ 11	— 82	+ 8	23.21	+5	10.0
	10		9.5723ii	31.0377iv	+ 1	+ .2	— .3	40 27 19.95	+ 9 2.35	+ 94	0	+15	23.39	+5	
	IV 1		21.0643	18.3043	— 5	+1.3	+2.8	40 35 13.05	+ 1 9.72	+ 9	+ 58	+ 2	23.46	+5	10.0
	2		15.2880	26.7350	+ 67	+ .4	0	40 41 12.35	— 4 49.39	+ 5	+ 7	— 8	23.00	+5	
	3		29.5930iv	10.0457ii	0	—1.1	—2.0	40 44 38.19	— 8 13.89	— 79	— 45	—17	22.89	+5	
	4		29.4220iv	10.7980ii	— 1	+ 6	—1.4	40 44 15.00	— 7 50.55	— 82	— 8	—14	23.41	+5	10.0
	5		25.5547	21.5713	+ 84	— .3	+ .8	40 34 41.49	+ 1 40.86	+ 5	+ 5	+ 3	22.48	+5	
	7		4.9910ii	30.3413iv	— 73	+ .4	+1.6	40 25 41.24	+10 40.32	+ 98	+ 27	+24	23.05	+4	
	8		15.0403	27.5943	+ 99	—3.9	—1.3	40 41 41.46	— 5 17.44	+ 7	— 83	—11	23.15	+4	
	9		25.8537	13.1320	— 39	+2.3	+1.3	40 31 1.20	+ 5 21.33	+ 8	+ 56	+10	23.27	+4	
Jan.	10		29.9500iv	8.6447ii	— 6	—1.2	— .3	40 27 23.89	+ 8 58.29	+ 95	— 24	+17	23.06	+4	9.4
17	III 7	R	22.8370	16.8870	— 5	+2.6	+1.8	40 38 52.78	— 2 30.32	+ 5	+ 67	— 4	23.14	+5	13.5
	8		16.2907	26.9267	+100	— .6	— .9	40 40 52.81	— 4 28.97	+ 7	— 21	— 8	23.62	+5	13.2
	9		26.1460	14.6260	+ 26	+ .9	+ .7	40 31 31.87	+ 4 51.13	+ 11	+ 24	+ 8	23.43	+5	
	10		32.2473iv	10.7777ii	+ 12	—2.8	—3.1	40 27 19.94	+ 9 2.48	+ 94	— 87	+15	22.64	+5	
	IV 1		19.5190	22.2853	+ 14	0	+ .4	40 35 13.06	+ 1 9.93	+ 8	+ 5	+ 2	23.14	+5	12.4
	2		26.8300	15.3927	+ 75	—1.6	+ .8	40 41 12.36	— 4 49.16	+ 5	+ 38	— 8	23.55	+5	
	3		10.8207ii	30.3633iv	0	—2.5	—1.3	40 44 38.23	— 8 13.76	— 89	— 60	—17	22.81	+5	
	4		11.7530ii	30.4087iv	— 9	— .1	+ .8	40 44 15.05	— 7 51.32	— 82	+ 9	—14	22.86	+5	11.9

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Jan.								° ′ ″					° ′ ″		
17	IV 5	D	21.7570	17.7357	— 6	—1.1	— .2	40 34 41.55	+ 1 41.58	+ 5	— 21	+ 3	40 36 23.00	+5	11.7
	6	R	23.6953	16.3467	0	+4.9	+4.4	40 39 28.22	— 3 5.66	+ 5	+1.40	— 5	23.96	+5	11.6
	8		28.7980	16.2130	+186	+ .4	+ .7	40 41 41.55	— 5 18.44	+ 7	+ 16	—11	23.23	+4	11.4
	9		15.1907	27.9213	+118	+1.1	+ .4	40 31 1.30	+ 5 21.95	+ 8	+ 24	+10	23.67	+4	11.3
	10		10.3440ii	31.6487iv	+ 7	+ .2	— .6	40 27 24.00	+ 8 58.30	+ 95	— 4	+17	23.38	+4	
Jan.															
19	VIII 6	R	20.3207	22.9077	+ 24	—1.3	—2.0	40 37 28.61	— 1 5.42	+ 7	— 48	— 2	22.76	—7	15.8
	7		13.0997ii	29.5257iv	— 27	— .9	—2.0	40 29 27.28	+ 6 54.94	+ 93	— 41	+12	22.86	—8	15.6
	8		23.8653	22.7310	+ 22	+ .8	+ .4	40 35 53.71	+ 28.72	+ 10	+ 18	+ 1	22.72	—7	15.4
	10		4.5483ii	31.8480iv	— 79	— .7	— .4	40 47 53.38	—11 29.53	— 80	— 17	—23	22.65	—7	15.2
	11		30.1233	15.2220	+235	— .7	— .9	40 42 40.73	— 6 17.08	+ 4	— 23	—11	23.35	—8	
	IX 1		29.6023	13.4767	+146	—1.2	—1.0	40 29 35.75	+ 6 47.79	+ 8	— 33	+13	23.42	—8	15.2
	2		25.3593	18.0570	+ 75	+2.6	+2.3	40 39 27.04	— 3 4.68	+ 5	+ 74	— 5	23.10	—8	
	3		16.9310	22.9163	— 4	— .5	— .6	40 38 54.30	— 2 31.21	+ 5	— 16	— 4	22.94	—8	15.2
	4		20.3867	22.0330	+ 12	+ .6	+1.3	40 35 40.77	+ 41.63	+ 6	+ 27	+ 2	22.75	—8	15.3
	5		20.4990	23.3693	+ 33	—1.1	— .3	40 37 35.40	— 1 12.61	+ 7	— 23	— 2	22.61	—8	15.4
Jan.	6		22.1063	21.0553	+ 10	— .9	—1.8	40 36 49.70	— 26.58	+ 9	— 38	— 1	22.82	—7	15.5
20	VIII 9	D	12.5550	26.7510	— 30	+ .7	+ .6	40 30 24.21	+ 5 58.59	+ 9	+ 19	+11	23.19	—7	13.6
	10		31.7257iv	4.4343ii	— 84	+ .6	— .3	40 47 53.31	—11 29.31	— 80	+ 6	—23	23.03	—7	
	11		13.3713	28.2967	+ 74	— .8	— .4	40 42 40.63	— 6 17.28	+ 4	— 18	—11	23.10	—8	14.5
	IX 1		11.7923	27.9093	— 15	—3.6	—2.5	40 29 35.64	+ 6 47.16	+ 8	— 94	+13	22.07	—8	14.9
	2		17.0890	24.3517	+ 32	—2.4	—2.5	40 39 26.90	— 3 3.57	+ 5	— 73	— 5	22.60	—8	
	3		21.7683	15.7853	— 42	+ .1	— .8	40 38 54.14	— 2 31.05	+ 5	— 9	— 4	23.01	—8	15.0
	5		21.1623	18.2900	— 5	— .8	— .8	40 37 35.23	— 1 12.56	+ 7	— 24	— 2	22.48	—8	
Jan.	6		18.1353	19.2207	— 8	0	+ .8	40 36 49.51	— 27.41	+ 9	+ 10	— 1	22.28	—7	14.4
21	IV 1	D	21.2953	18.5160	— 2	0	+ .3	40 35 12.96	+ 1 10.21	+ 9	+ 4	+ 2	23.32	+5	21.0
	2		14.2420	25.7097	— 3	0	+ .6	40 41 12.29	— 4 49.72	+ 1	+ 7	— 8	22.57	+5	20.0
	3		28.6263iv	9.0660ii	+ 3	0	— .4	40 44 38.23	— 8 14.19	— 85	— 5	—17	22.97	+5	
	4		29.7127iv	11.0670ii	— 3	0	—1.2	40 44 15.09	— 7 51.07	— 88	— 15	—14	22.85	+5	
	5	R	20.6860	24.6810	+ 64	— .6	—1.1	40 34 41.67	+ 1 41.09	+ 6	— 24	+ 3	22.61	+5	20.0
	6	D	16.7987	24.1420	+ 20	— .8	—2.2	40 39 28.37	— 3 5.58	+ 3	— 42	— 5	22.35	+5	
	7		6.4533ii	31.7653iv	— 28	+1.0	+1.4	40 25 41.53	+10 39.43	+1.07	+ 35	+24	22.62	+4	
	8		14.2380	26.8383	+ 37	—2.8	—1.0	40 41 41.82	— 5 18.43	+ 3	— 60	—11	22.71	+4	
	9		25.6670	12.9473	— 52	—2.0	—2.8	40 31 1.60	+ 5 21.22	+ 12	— 70	+10	22.34	+4	19.5
	10		31.7440iv	10.4417ii	+ 9	—1.6	—2.3	40 27 24.34	+ 8 58.22	+1.02	— 57	+17	23.18	+4	17.1
	V 1		13.1577	28.9080	+ 95	—1.0	—2.2	40 29 44.81	+ 6 38.17	+ 13	— 45	+11	22.77	+4	17.0
	2		22.3887	18.5837	+ 12	— .2	— .5	40 38 24.16	— 2 1.42	+ 4	— 10	— 4	22.64	+3	
	3		31.6363iv	8.2097ii	— 2	—1.1	—1.1	40 26 30.10	+ 9 51.86	+1.09	— 33	+24	22.96	+3	
	4		27.5303	12.8060	+ 14	0	0	40 42 35.00	— 6 12.04	+ 1	0	—12	22.85	+3	
	5		6.8060ii	30.1760iv	— 30	—3.0	—3.5	40 26 32.96	+ 9 50.36	+1.04	— 96	+19	23.59	+3	16.9
	6		19.9850	21.2703	+ 5	— .5	—1.9	40 36 54.72	— 32.49	+ 12	— 33	— 1	22.01	+2	16.4
	7		27.8593	12.7413	+ 27	+ .4	—2.1	40 42 45.33	— 6 22.02	+ 2	— 20	—13	23.00	+2	
	8		22.1467	17.8430	— 1	—2.0	—2.1	40 34 34.74	+ 1 48.73	+ 9	— 61	+ 4	22.99	+2	
	9		27.9360	13.7890	+ 70	—1.8	—2.5	40 42 21.59	— 5 57.60	0	— 63	—10	23.26	+2	
Jan.	10		18.5333	21.9953	+ 5	— .2	— .7	40 37 50.50	— 1 27.48	+ 6	— 12	— 3	22.93	+1	16.4
23	IV 1	R	19.4117	22.2067	+ 13	—1.1	+ .3	40 35 12.82	+ 1 10.64	+ 9	— 15	+ 2	23.42	+4	22.4
	2		27.3140	15.9143	+108	— .8	—2.2	40 41 12.15	— 4 48.28	+ 1	— 42	— 8	23.38	+5	
	3		12.7840ii	32.3377iv	— 9	—2.1	—2.4	40 44 38.15	— 8 13.98	— 85	— 67	—17	22.48	+4	22.7
	4		10.6033ii	29.2373iv	— 1	+ .2	+1.0	40 44 15.02	— 7 50.77	— 88	+ 16	—14	23.39	+5	21.9
	5	D	26.2417	22.2150	+101	—1.2	—1.6	40 34 41.62	+ 1 41.99	+ 7	— 41	+ 3	23.30	+5	
	7	R	34.0010iv	8.6357ii	+ 41	—3.3	—3.8	40 25 41.53	+10 40.93	+1.07	—1.05	+24	22.72	+4	21.4
	8		28.1407	15.5667	+137	—2.0	—2.7	40 41 41.84	— 5 18.01	+ 3	— 69	—11	23.06	+4	
	9		15.1527	27.8750	+115	—1.0	—1.6	40 31 1.65	+ 5 21.70	+ 12	— 37	+10	23.20	+4	21.3
Jan.	10		8.8033ii	30.0993iv	— 4	+ .9	+ .2	40 27 24.41	+ 8 58.01	+1.02	+ 18	+17	23.79	+4	21.4
25	IV 1	D	21.0810	18.3163	— 5	+ .9	+2.2	40 35 12.68	+ 1 9.83	+ 9	+ 44	+ 2	23.06	+4	35.1
	2		14.1090	25.5707	— 10	+ .6	+1.8	40 41 12.03	— 4 49.53	+ 1	+ 33	— 8	22.76	+5	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″	′ ″				° ′ ″		
Jan.															
25	IV 3	D	29.6773iv	10.1157ii	0	— .4	—1.4	40 44 38.05	— 8 14.17	— 85	— 25	—17	40 36 22.61	+4	33.9
	4		29.2713iv	10.6127ii	— 1	— .2	— .8	40 44 14.94	— 7 51.36	— 88	— 14	—14	22.42	+5	33.4
	5	R	19.8873	23.8797	+ 45	+ .4	—1.1	40 34 41.56	+ 1 40.97	+ 7	— 7	+ 3	22.56	+5	
	6	D	13.7193	21.0650	—115	+ .6	—1.3	40 39 28.29	— 3 5.28	+ 3	— 7	— 5	22.92	+5	
	7	R	33.6347iv	8.2857ii	+ 30	—1.9	—2.4	40 25 41.52	+10 40.45	+1.07	— 63	+24	22.65	+4	32.9
	8	D	13.1120	25.7247	— 45	— .5	—1.3	40 41 41.85	— 5 18.51	+ 3	— 25	—11	23.01	+4	32.8
	9		27.0453	14.3257	+ 50	— .9	— .9	40 31 1.67	+ 5 21.45	+ 12	— 27	+10	23.07	+4	31.5
	10		32.5433iv	11.2580ii	+ 15	—1.3	—1.1	40 27 24.44	+ 8 57.76	+1.02	— 36	+17	23.03	+4	
V	1		15.6310	31.3680	+326	—1.0	—1.5	40 29 44.93	+ 6 38.38	+ 13	— 36	+11	23.19	+4	31.0
	2	R	18.7130	23.4827	+ 32	—2.7	—2.0	40 38 24.32	— 2 0.57	+ 4	— 72	— 4	23.03	+4	30.5
	3		10.4677ii	33.9173iv	+ 43	— .9	—2.8	40 26 30.28	+ 9 52.50	+1.09	— 51	+24	23.60	+3	
	4		13.0760	27.7820	+ 40	—1.9	—2.5	40 42 35.22	— 6 11.61	+ 1	— 65	—12	22.85	+3	
	5		32.5227iv	9.1763ii	+ 16	—2.9	—1.8	40 26 33.19	+ 9 49.82	+1.04	— 72	+19	23.52	+3	30.1
	6		22.4213	21.1563	+ 14	—1.7	—1.3	40 36 54.96	— 31.99	+ 12	— 46	— 1	22.62	+2	29.4
	7		13.1880	28.3250	+ 68	— .8	—1.1	40 42 45.61	— 6 22.57	+ 2	— 27	—13	22.66	+2	29.2
	8		20.0267	24.3103	+ 55	—2.1	—3.2	40 34 35.05	+ 1 48.35	+ 9	— 77	+ 4	22.76	+2	
	9		14.0110	28.1777	+ 92	—1.8	—2.0	40 42 21.93	— 5 58.12	0	— 56	—10	23.15	+2	
Jan.	10		24.2056	20.7810	+ 50	— .8	— .9	40 37 50.84	— 1 26.64	+ 6	— 25	— 3	23.98	+2	28.5
26	IV 1	R	19.2053	21.9907	+ 10	+ .9	+ .8	40 35 12.63	+ 1 10.39	+ 9	+ 26	+ 2	23.39	+4	35.0
	2		25.9247	14.5327	+ 12	—1.3	—2.1	40 41 11.97	— 4 47.82	+ 1	— 49	— 8	23.59	+5	
	3		12.0247ii	31.5887iv	— 5	+ .5	+ .5	40 44 38.02	— 8 14.22	— 85	+ 15	—17	22.93	+4	
	4		11.7940ii	30.4253iv	— 10	—1.7	— .3	40 44 14.91	— 7 50.64	— 88	— 33	—14	22.92	+5	34.5
	5	D	25.5883	21.6133	+ 85	+3.0	+1.5	40 34 41.54	+ 1 40.63	+ 7	+ 70	+ 3	22.97	+5	
	6	R	23.4523	16.0623	— 10	+4.2	+3.6	40 39 28.28	— 3 6.66	+ 3	+1.18	— 5	22.78	+5	
	7		33.2347iv	7.9040ii	+ 17	— .7	+ .2	40 25 41.52	+10 39.95	+1.07	— 9	+24	22.69	+4	
	8		27.9287	15.3530	+122	— .6	— .8	40 41 41.86	— 5 18.00	+ 3	— 20	—11	23.58	+4	
	10		8.9470ii	30.2343iv	— 2	— .2	— .2	40 27 24.46	+ 8 57.76	+1.02	— 6	+17	23.35	+4	33.4
V	1		28.8470	13.0970	+ 90	— .1	—1.6	40 29 44.96	+ 6 38.11	+ 13	— 22	+11	23.09	+4	
	2		18.4637	23.2417	+ 24	—2.0	—1.8	40 38 24.36	— 2 0.76	+ 4	— 57	— 4	23.03	+4	31.6
	3		10.2647ii	33.7010iv	+ 40	—2.2	—2.3	40 26 30.32	+ 9 52.15	+1.09	— 67	+24	23.13	+3	31.2
	4		13.9177	28.6317	+110	— .4	— .2	40 42 35.26	— 6 11.99	+ 1	— 9	—12	23.07	+3	
	5		31.4497iv	8.0943ii	— 4	—2.5	—1.2	40 26 33.24	+ 9 50.00	+1.04	— 58	+19	23.89	+3	a
	6		21.9147	20.6853	+ 9	—2.4	—3.1	40 36 55.00	— 31.08	+ 12	— 81	— 1	23.22	+2	30.4
	7		12.7787	27.9043	+ 31	—1.8	—1.7	40 42 45.66	— 6 22.19	+ 2	— 52	—13	22.84	+2	30.0
	8		19.6220	23.8993	+ 44	—1.0	—1.8	40 34 35.11	+ 1 48.16	+ 9	— 40	+ 4	23.00	+2	
	9		13.2710	27.4623	+ 31	—2.0	—1.6	40 42 22.00	— 5 58.58	0	— 54	—10	22.78	+2	
Feb.	10		22.7943	19.3463	+ 22	—2.3	—1.8	40 37 50.91	— 1 27.16	+ 6	— 62	— 3	23.16	+2	30.5
3	IX 1	R	28.1327	11.9563	+ 5	—2.0	—3.1	40 29 34.49	+ 6 48.69	+ 14	— 74	+13	22.71	—8	22.6
	2		24.4433	17.2520	+ 35	— .9	— .6	40 39 25.30	— 3 1.77	+ 3	— 23	— 5	23.28	—9	
	3		17.7793	23.6867	+ 26	— .9	— .5	40 38 52.42	— 2 29.31	+ 4	— 22	— 4	22.89	—9	21.6
	4		19.8113	21.5977	+ 6	—1.3	—2.0	40 35 38.63	+ 45.15	+ 7	— 48	+ 2	23.39	—9	
	5		20.9707	23.7515	+ 40	+ .2	— .5	40 37 33.24	— 1 10.35	+ 6	— 3	— 2	22.90	—8	21.5
	6		21.8020	20.8523	+ 7	—1.8	—1.3	40 36 47.41	— 24.01	+ 9	— 47	— 1	23.01	—8	
	7		8.4650ii	31.9930iv	+ 5	—2.0	—2.6	40 46 17.89	— 9 54.42	— 90	— 67	—17	21.73	—9	
	X 1		27.4873	15.2263	+100	—1.4	—2.1	40 41 33.17	— 5 10.01	+ 1	— 51	— 9	22.57	—9	20.3
	2		32.6383iv	12.2980ii	+ 3	+ .4	—1.4	40 27 48.37	+ 8 33.89	+1.03	— 11	+17	23.35	—8	21.1
Feb.	3		21.6047	18.6603	+ 3	+ .7	+ .2	40 35 8.63	+ 1 14.39	+ 7	+ 14	+ 2	23.25	—9	19.8
4	IV 3	D	29.3050iv	9.8063ii	— 1	—3.2	—4.5	40 44 37.82	— 8 12.63	— 85	—1.12	—17	23.05	+4	18.2
	4		29.0217iv	10.4233ii	+ 2	—2.5	—2.4	40 44 14.76	— 7 49.90	— 88	— 73	—14	23.11	+4	17.6
	5	R	17.5200	21.5137	— 13	0	— .4	40 34 41.52	+ 1 40.87	+ 7	— 5	+ 3	22.44	+4	17.3
	6	D	16.0067	23.3610	— 12	— .2	+ .6	40 39 28.33	— 3 5.78	+ 3	+ 4	— 5	22.57	+4	
	7		4.8060ii	30.0850iv	— 80	+1.7	+2.3	40 25 41.74	+10 38.47	+1.07	+ 58	+24	22.10	+4	
	8		14.0607	26.7093	+ 29	+ .1	+ .9	40 41 42.19	— 5 19.64	+ 3	+ 13	—11	22.60	+4	17.2
	9		28.3160	15.6383	+147	— .8	— .5	40 31 2.10	+ 5 20.68	+ 12	— 20	+10	22.80	+4	
	10		30.4320iv	9.1690ii	— 2	— .2	+ .7	40 27 24.95	+ 8 57.20	+1.02	+ 5	+17	23.39	+4	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″							
Feb. 4	V 1		13.5540	29.2623	+130	+ .1	+ .9	40 29 45.49	+ 6 37.20	+ 13	+ 13	+11	40 36 23.06	+4	16.1
	2		23.5250	18.6633	+ 32	+2.6	+3.0	40 38 25.01	— 2 2.91	+ 4	+ 83	— 4	22.93	+4	16.2
	3		29.6113iv	6.2623ii	— 40	+1.2	+2.6	40 26 31.03	+ 9 49.81	+1.09	+ 54	+24	22.71	+3	
	4		27.7517	12.9667	+ 33	+1.1	+1.7	40 42 36.03	— 6 13.63	+ 1	+ 41	—12	22.70	+3	
	5		8.3877ii	31.6563iv	+ 1	+ .4	0	40 26 34.04	+ 9 47.88	+1.04	+ 7	+19	23.22	+3	16.2
	6		19.2107	20.5457	— 1	+2.0	+1.8	40 36 55.85	— 33.73	+ 12	+ 57	— 1	22.80	+2	
	7		26.7983	11.6107	— 72	—1.3	— .3	40 42 46.57	— 6 23.53	+ 2	— 26	—13	22.67	+2	16.2
	8		21.6960	17.4847	— 11	+1.0	+1.0	40 34 36.07	+ 1 46.37	+ 9	+ 30	+ 4	22.87	+2	
	9		28.4450	14.1523	+110	+1.4	+2.5	40 42 23.06	— 6 1.37	0	+ 56	—10	22.15	+2	
	10		14.9767	18.5687	— 69	+2.3	+3.2	40 37 51.97	— 1 30.58	+ 5	+ 80	— 3	22.21	+2	15.0
	IX 1	D	12.2593	28.4280	+ 33	+ .7	+ .4	40 29 34.49	+ 6 48.63	+ 14	+ 17	+13	23.56	—8	9.4
	2		16.0597	23.2403	— 15	—2.3	—1.7	40 39 25.26	— 3 1.39	+ 3	— 61	— 5	23.24	—9	
	3		22.1013	16.2093	— 30	— .8	— .8	40 38 52.37	— 2 28.79	+ 4	— 24	— 4	23.34	—9	10.4
	4		21.2483	19.5007	+ 4	— .7	0	40 35 38.57	+ 44.16	+ 7	— 12	+ 2	22.70	—9	
	5		21.0953	18.3337	— 5	—1.1	— .2	40 37 33.16	— 1 9.77	+ 6	— 21	— 2	23.22	—8	
	6		19.4767	20.4150	+ 1	—2.2	—2.7	40 36 47.33	— 23.71	+ 9	— 72	— 1	22.98	—8	
	7		32.4927iv	8.9647ii	+ 16	+2.1	+1.1	40 46 17.78	— 9 54.50	— 90	+ 50	—17	22.71	—9	10.6
	X 1		13.7760	26.0483	— 7	— .4	+ .8	40 41 33.06	— 5 10.06	+ 1	+ 3	— 9	22.95	—9	10.3
	3		19.2080	22.1943	+ 12	—1.7	—3.0	40 35 8.50	+ 1 15.48	+ 7	— 67	+ 2	23.40	—9	9.5
	4		10.2317ii	25.7737iv	+ 51	—2.8	—3.1	40 29 50.11	+ 6 32.82	+1.00	— 87	+11	23.17	—9	
Feb. 8	IV 5	D	25.9697	21.9030	+ 94	— .8	—1.9	40 34 41.21	+ 1 42.98	+ 7	— 38	+ 3	23.91	+4	23.5
	6	R	24.0167	16.7027	+ 14	0	+ .4	40 39 28.06	— 3 4.82	+ 3	+ 5	— 5	23.27	+4	
	7		33.0930iv	7.6940ii	+ 12	—5.9	—5.4	40 25 41.56	+10 41.71	+1.07	—1.70	+24	22.88	+3	
	8		27.2680	14.6607	+ 73	+ .3	— .3	40 41 42.04	— 5 18.69	+ 3	+ 1	—11	23.28	+4	23.4
	9		14.6763	27.4040	+ 79	— .1	—1.0	40 31 2.00	+ 5 21.75	+ 12	— 14	+10	23.83	+4	
	10		11.3553ii	32.6403iv	+ 15	— .4	+ .2	40 27 24.89	+ 8 57.78	+1.02	— 4	+17	23.82	+4	
	V 1		28.9207	13.2000	+ 98	—1.9	—1.1	40 29 45.45	+ 6 37.42	+ 13	— 46	+11	22.65	+4	
	2		18.2917	23.1163	+ 20	—1.5	—1.7	40 38 25.03	— 2 1.94	+ 4	— 47	— 4	22.62	+4	22.4
	4		14.4863	29.2133	+160	0	— .5	40 42 36.11	— 6 12.46	+ 1	— 7	—12	23.47	+3	21.4
	5		32.5750iv	9.1757ii	+ 18	— .8	— .2	40 26 34.14	+ 9 48.68	+1.04	— 16	+19	23.89	+3	
	6		21.3487	20.0540	+ 5	—3.8	—3.3	40 36 56.00	— 32.73	+ 12	—1.07	— 1	22.31	+2	21.4
	7		13.6877	28.8563	+114	—2.0	— .9	40 42 46.75	— 6 23.50	+ 2	— 45	—13	22.69	+3	20.4
	8		19.4137	23.6513	+ 39	+ .8	— .9	40 34 36.28	+ 1 47.16	+ 9	+ 2	+ 4	23.59	+2	20.4
	9		13.7503	27.9873	+ 73	—1.7	—1.3	40 42 23.32	— 5 59.87	0	— 46	—10	22.89	+2	
	10		23.4943	19.9990	+ 37	—3.1	—2.6	40 37 52.23	— 1 28.39	+ 6	— 86	— 3	23.01	+2	20.4
Feb. 11	IX 1	R	29.0157	12.8837	+ 90	+1.0	+ .6	40 29 34.43	+ 6 47.78	+ 14	+ 24	+13	22.72	—8	25.9
	2		23.9333	16.6923	+ 12	+5.2	+4.1	40 39 25.04	— 3 2.97	+ 3	+1.41	— 5	23.46	—9	
	3		17.5740	23.5037	+ 19	+2.4	+2.5	40 38 52.09	— 2 29.85	+ 4	+ 73	— 4	22.97	—9	
	4		19.9993	21.7587	+ 9	+ .5	+1.3	40 35 38.19	+ 44.47	+ 7	+ 25	+ 2	23.00	—9	25.9
	5		20.2013	22.9553	+ 28	+ .6	+ .8	40 37 32.74	— 1 9.65	+ 6	+ 20	— 2	23.33	—8	
	6		22.6480	21.6907	+ 12	— .2	— .3	40 36 46.84	— 24.21	+ 9	— 7	— 1	22.64	—8	
	7		9.3390ii	32.8047iv	+ 22	— .2	0	40 46 17.22	— 9 52.88	— 90	— 3	—17	23.24	—9	
	X 1		27.7123	15.4867	+116	— .6	—1.4	40 41 32.39	— 5 9.16	+ 1	— 28	— 9	22.87	—9	25.3
	2		32.4233iv	12.0673ii	+ 7	+ .5	+2.1	40 27 47.58	+ 8 34.28	+1.03	+ 35	+17	23.41	—8	
	3		22.6990	19.6973	+ 23	—1.7	—1.4	40 35 7.74	+ 1 15.89	+ 7	— 47	+ 2	23.25	—9	
	4		29.3170iv	13.7620ii	— 41	+ .6	— .1	40 29 49.30	+ 6 32.87	+1.00	+ 8	+11	23.36	—9	
Feb. 14	5		11.5110ii	32.2990iv	+ 11	— .8	+ .1	40 45 69.18	— 8 45.21	— 84	— 12	—20	22.81	—8	24.8
	IV 7	D	6.5170ii	31.8277iv	— 27	+3.0	+4.7	40 25 41.51	+10 39.32	+1.07	+1.11	+24	23.25	+3	36.7a
	8		12.3573	25.0070	— 97	+2.1	+1.2	40 41 42.05	— 5 19.30	+ 3	+ 51	—11	23.18	+4	35.6
	9		26.8137	14.1383	+ 35	+1.8	+1.2	40 31 2.05	+ 5 20.29	+ 12	+ 46	+10	23.02	+4	34.9
	10		32.9030iv	11.6937ii	+ 16	+1.5	+2.1	40 27 25.00	+ 8 55.82	+1.02	+ 52	+17	22.53	+4	
	V 1		14.3920	30.0590	+205	+1.6	+1.6	40 29 45.58	+ 6 36.29	+ 13	+ 48	+11	22.59	+4	34.9
	2		23.3443	18.4970	+ 27	+ .4	+ .4	40 38 25.24	— 2 2.52	+ 4	+ 12	— 4	22.84	+4	
	3		31.2530iv	7.8800ii	— 9	+ .1	—1.4	40 26 31.36	+ 9 50.41	+1.09	— 16	+24	22.94	+3	34.6
	4		28.1933	13.4490	+ 72	+1.0	+ .1	40 42 36.41	— 6 12.65	+ 1	+ 18	—12	23.83	+3	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Feb. 14	V 5	D	8.8837ii	32.1343iv	+ 9	+ .8	+1.6	40 26 34.47	+ 9 47.37	+1.04	+ 34	+19	40 36 23.41	+3	34.2
	6		19.6917	21.0487	0	+1.4	+1.9	40 36 56.38	— 34.28	+ 12	+ 48	— 1	22.69	+3	34.3
	7		27.8197	12.6137	+ 18	+ .5	+ .3	40 42 47.17	— 6 24.17	+ 2	+ 12	—13	23.01	+3	33.4
	8		24.5803	20.3940	+ 59	+ .2	+ .5	40 34 36.75	+ 1 45.91	+ 9	+ 10	+ 4	22.89	+2	
	9		30.6447	16.3943	+296	0	— .2	40 42 23.84	— 6 0.74	0	— 2	—10	22.98	+3	
Feb. 15	10		21.2217	24.7803	+ 65	+2.2	+1.8	40 37 52.77	— 1 30.06	+ 5	+ 60	— 3	23.33	+2	33.2
	VI 1	R	28.7187	13.0527	+ 82	+2.4	+2.5	40 29 45.62	+ 6 35.94	+ 13	+ 73	+11	22.53	+4	43.8
	2		18.7917	23.6767	+ 37	+2.2	+2.8	40 38 25.25	— 2 3.49	+ 4	+ 73	— 4	22.49	+3	43.1
	4		14.3817	29.1473	+154	+ .9	+2.3	40 42 36.48	— 6 13.37	+ 1	+ 45	—12	23.45	+3	
	5		33.2690iv	10.0053ii	+ 34	—1.5	— .8	40 26 34.55	+ 9 47.73	+1.04	— 36	+19	23.15	+3	
	6		22.2247	20.8870	+ 12	+1.2	+ .3	40 36 56.48	— 33.82	+ 12	+ 24	— 1	23.01	+3	43.1
	7		13.2613	28.4960	+ 79	+1.5	+2.2	40 42 47.27	— 6 25.03	+ 2	+ 54	—13	22.67	+3	42.5
	8		19.9403	24.1350	+ 50	— .3	— .2	40 34 36.85	+ 1 46.08	+ 9	— 7	+ 4	22.99	+2	
	9		14.8610	29.1597	+170	+1.4	+1.0	40 42 23.96	— 6 1.62	0	+ 37	—10	22.61	+3	42.5
	IX 1	D	11.5330	27.6850	— 37	+1.0	0	40 29 34.39	+ 6 47.92	+ 14	+ 17	+13	23.75	—8	38.6
	2		16.3617	23.5427	— 2	— .4	—1.6	40 39 24.88	— 3 1.39	+ 3	— 27	— 5	23.20	—8	38.4
	3		22.2520	16.3820	— 23	+ .3	+ .2	40 38 51.90	— 2 28.23	+ 4	+ 7	— 4	23.74	—8	37.8
	4		20.6230	18.8373	— 2	— .6	— .3	40 35 37.91	+ 45.10	+ 7	— 14	+ 2	22.96	—9	37.8
	5		20.5897	17.8287	— 13	— .8	—1.1	40 37 32.43	— 1 9.71	+ 6	— 27	— 2	22.49	—8	
	X 1		12.8333	25.0670	— 76	—1.6	—2.0	40 41 31.94	— 5 8.85	+ 1	— 53	— 9	22.48	—9	37.3
	2		9.2187ii	29.6240iv	0	—1.2	—1.4	40 27 47 11	+ 8 35.46	+1.03	— 38	+17	23.39	—8	
	3		18.8747	21.9240	+ 7	— .7	—1.2	40 35 7.22	+ 1 17.04	+ 7	— 27	+ 2	24.08	—9	
	4		11.6780ii	27.2440iv	+ 15	+ .2	— .7	40 29 48.74	+ 6 33.25	+1.00	— 5	+11	23.05	—9	
	5		28.1173iv	7.3623ii	— 10	0	— .8	40 45 8.65	— 8 44.27	— 84	— 10	—20	23.24	—8	
	6		21.3340	16.7070	— 28	— .8	—1.6	40 34 26.28	+ 1 56.82	+ 9	— 34	+ 4	22.89	—8	36.7
Feb. 16	IX 2	R	23.7177	16.5097	+ 4	+2.5	+2.4	40 39 24.88	— 3 2.11	+ 3	+ 73	— 5	23.48	—8	25.0
	3		16.5867	22.4917	— 16	+1.1	+1.8	40 38 51.90	— 29.14	+ 4	+ 42	— 4	23.18	—8	25.0
	4		19.5460	21.2667	+ 4	+2.0	+2.5	40 35 37.89	+ 43.48	+ 7	+ 66	+ 2	22.12	—9	24.4
	5		19.0867	21.8707	+ 8	+ .5	+2.6	40 37 32.40	— 1 10.35	+ 6	+ 42	— 2	22.51	—8	24.0
	6		21.6343	20.6843	+ 8	+ .9	+ .5	40 36 46.44	— 24.02	+ 9	+ 22	— 1	22.72	—8	
	7		7.4790ii	30.9450iv	— 17	+ .6	+2.2	40 46 16.79	— 9 52.79	— 89	+ 38	—17	23.32	—9	
	X 1		26.7107	14.4337	+ 40	+2.0	+3.3	40 41 31.87	— 5 10.26	+ 1	+ 76	— 9	22.29	—9	23.7
	3		22.7013	19.7043	+ 21	+2.6	+4.2	40 35 7.13	+ 1 15.77	+ 7	+ 98	+ 2	23.97	—9	23.5
	4		30.1147iv	14.5907ii	— 63	+3.1	+4.5	40 29 48.65	+ 6 32.03	+ 99	+1.11	+11	22.89	—9	
	6		18.6770	23.2500	+ 28	+1.1	+1.2	40 34 26.16	+ 1 55.60	+ 9	+ 34	+ 4	22.23	—8	23.4
Feb. 20	V 1	D	12.0183	27.7407	— 10	+ .7	0	40 29 45.54	+ 6 37.20	+ 17	+ 12	+11	23.14	+4	16.5
	2		23.1290	18.2847	+ 21	— .7	—1.4	40 38 25.30	— 2 2.45	+ 3	— 30	— 4	22.54	+3	
	3		31.6903iv	8.3263ii	0	—2.0	— .2	40 26 31.52	+ 9 50.29	+1.14	— 36	+24	22.83	+3	15.9
	4		29.0517	14.2730	+145	+1.0	+ .6	40 42 36.61	— 6 13.75	— 4	+ 24	—12	22.94	+3	
	5		8.6963ii	31.9570iv	+ 7	—1.6	—1.4	40 26 34.71	+ 9 47.70	+1.09	— 45	+19	23.24	+3	
	6		19.0333	20.4210	— 2	— .4	+1.2	40 36 56.70	— 35.06	+ 12	+ 8	— 1	21.83	+3	15.6
	7		27.2217	11.9657	— 35	+ .6	+1.4	40 42 47.53	— 6 25.35	— 3	+ 28	—13	22.30	+3	
	8		21.9173	17.7567	— 5	— .2	+ .5	40 34 37.17	+ 1 45.10	+ 10	+ 3	+ 4	22.44	+2	
	9		28.4523	14.1320	+110	+2.9	+1.5	40 42 24.33	— 6 2.08	— 4	+ 69	—10	22.80	+3	
	10		18.3837	21.9803	+ 4	+ .4	+ .4	40 37 53.28	— 1 30.88	+ 4	+ 12	— 3	22.53	+3	15.5
	VI 1		16.5360	24.7137	+ 29	+ .1	+1 3	40 32 55.60	+ 3 26.68	+ 13	+ 18	+ 6	22.65	+2	15.3
	2		23.8983	17.3273	+ 22	—2.0	—1.7	40 33 37.20	+ 2 46.07	+ 11	— 56	+ 5	22.87	+2	
	3		29.3100	12.9653	+110	—2.2	—2.4	40 43 17.08	— 6 53.23	— 5	— 68	—13	22.99	+2	
	4		23.6360	17.5713	+ 21	—1.1	— .2	40 33 50.06	+ 2 33.28	+ 10	— 21	+ 4	23.27	+2	
	5		24.2613	18.5700	+ 49	—1.1	—1.0	40 38 46.77	— 2 23.91	+ 3	— 32	— 5	22.52	+1	
	6		8.8623ii	29.9130iv	— 4	+ .3	— .4	40 27 29.48	+ 8 51.83	+1.08	0	+19	22.58	+1	
	7		22.2410	19.5787	+ 13	+ .4	— .2	40 37 30.58	— 1 7.29	+ 4	+ 4	— 2	23.35	+1	
	8		13.3650	29.8467	+154	+1.1	+1.6	40 43 19.64	— 6 56.80	— 5	+ 40	—13	23.06	+1	14.9
	9		29.3440iv	9.6343ii	— 61	—2.3	—1.6	40 28 4.21	+ 8 17.81	+1.05	— 59	+15	22.63	0	
	10		23.7393	17.9333	+ 29	—1.4	— .8	40 33 56.83	+ 2 26.76	+ 10	— 34	+ 4	23.39	0	15.5

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Feb.								° ′ ″					° ′ ″		
20	VI 11	D	13.6843	26.2473	0	+ .8	+ .8	40 31 6.08	+ 5 17.41	+ 16	+ 24	+10	40 36 23.99	0	
Feb.	12		30.4503	9.0823	— 29	— .1	0	40 27 22.10	+ 8 59.79	+ 23	— 1	+18	22.29	—1	14.3
24	V 1	R	26.2410	10.5270	—150	+ .7	+ .9	40 29 45.39	+ 6 36.58	+ 17	+ 23	+11	22.48	+3	33.2
	2		18.3220	23.1693	+ 22	— .7	— .8	40 38 25.21	— 2 2.51	+ 3	— 22	— 4	22.47	+3	32.9
	3		9.7937ii	33.1600iv	+ 30	— .2	—2.1	40 26 31.49	+ 9 50.35	+1.13	— 30	+24	22.91	+3	
	4		13.9900	28.7470	+120	—1.3	— .3	40 42 36.56	— 6 13.09	— 4	— 26	—12	23.05	+3	
Feb.	5		33.3020iv	10.0470ii	+ 33	— .1	+ .8	40 26 34.70	+ 9 47.55	+1.08	+ 9	+19	23.61	+3	32.6
25	IX 4	D	20.6003	18.7913	— 2	—2.0	—1.9	40 35 38.01	+ 45.70	+ 7	— 58	+ 2	23.22	—9	26.1
	5		20.1780	17.4470	— 20	—2.3	—2.7	40 37 32.43	— 1 8.94	+ 5	— 74	— 2	22.78	—8	
	6		18.5430	19.4633	— 5	—2.3	—2.6	40 36 46.38	— 23.23	+ 8	— 72	— 1	22.50	—8	
	7		32.3847iv	8.9740ii	+ 15	—2.5	—2.2	40 46 16.70	— 9 51.47	— 93	— 71	—17	23.42	—9	
	X 1		14.2620	26.4707	+ 26	—1.3	—2.5	40 41 31.64	— 5 8.49	— 3	— 54	— 9	22.49	—9	25.9
	2		10.7317ii	31.1507iv	0	—2.2	—2.9	40 27 46.75	+ 8 35.85	+1.05	— 75	+17	23.07	—8	
	3		16.6893	19.7503	— 32	—1.4	—2.3	40 35 6.77	+ 1 17.25	+ 8	— 53	+ 2	23.59	—9	25.0
	4		13.5427ii	29.1283iv	— 34	— .7	—1.8	40 29 48.23	+ 6 33.65	+1.00	— 35	+11	22.64	—9	25.0
	5		31.9417iv	11.2273ii	+ 8	—1.5	—2.7	40 45 8.11	— 8 43.33	— 86	— 60	—20	23.12	—8	
	6		22.3937	17.7497	+ 2	—1.7	—1.7	40 34 25.53	+ 1 57.33	+ 10	— 51	+ 4	22.49	—9	
	7		14.9883	26.4310	+ 47	— .9	—2.0	40 31 33.62	+ 4 49.20	+ 14	— 41	+ 8	22.63	—9	
Feb.	8		29.7397	10.0820	— 14	— .8	—1.7	40 44 39.94	— 8 16.58	— 8	— 35	—15	22.78	—9	
26	V 1	D	12.3153	28.0330	+ 16	— .9	— .7	40 29 45.28	+ 6 37.10	+ 17	— 24	+11	22.42	+3	30.6
	3		30.2997iv	6.9163ii	— 28	—1.6	—2.5	40 26 31.53	+ 9 50.66	+1.11	— 60	+24	22.94	+3	
	4		27.4153	12.6407	+ 2	— .3	— .1	40 42 36.61	— 6 13.25	— 4	— 6	—12	23.14	+3	
	5		7.0743ii	30.3373iv	— 25	+ .7	— .7	40 26 34.76	+ 9 47.62	+1.06	+ 3	+19	23.66	+3	30.4
	6		22.4760	21.1527	+ 17	+ .8	—1.0	40 36 56.82	— 33.47	+ 12	0	— 1	23.46	+3	
	7		12.6973	27.9343	+ 28	—1.0	— .2	40 42 47.68	— 6 24.99	— 3	— 19	—13	22.34	+3	30.2
	8		21.1233	25.2770	+ 79	+1.4	0	40 34 37.37	+ 1 45.13	+ 10	+ 24	+ 4	22.88	+3	
	9		13.2987	27.5787	+ 38	—2.2	—3.5	40 42 24.59	— 6 0.84	— 4	— 82	—10	22.79	+3	
	10		23.2047	19.6333	+ 29	+ .1	— .3	40 37 53.56	— 1 30.30	+ 4	— 2	— 3	23.25	+3	30.5
	VI 1		26.1853	17.9843	+102	— .8	— .3	40 32 55.91	+ 3 27.43	+ 13	— 17	+ 6	23.36	+3	
	2		18.5827	25.0970	+ 71	+1.6	+ .7	40 33 37.56	+ 2 44.75	+ 11	+ 36	+ 5	22.83	+2	
	3		12.0590	28.4413	+ 24	—1.2	+ .3	40 43 17.46	— 6 53.92	— 5	— 16	—13	23.20	+2	
	4		18.2120	24.2380	+ 44	— .6	—1.2	40 33 50.51	+ 2 32.35	+ 10	— 25	+ 4	22.75	+2	29.7
	5		18.5180	24.2187	+ 46	0	+ .1	40 38 47.22	— 2 24.13	+ 3	+ 1	— 5	23.08	+2	
	6		32.1630iv	11.1103ii	+ 10	— .3	— .8	40 27 29.92	+ 8 51.87	+1.05	— 15	+19	22.88	+1	
	7		19.0367	21.7020	+ 8	—1.7	—1.8	40 37 31.12	— 1 7.35	+ 4	— 52	— 2	23.27	+1	
	8		28.8280	12.3463	+ 56	— .7	—1.3	40 43 20.19	— 6 56.51	— 5	— 29	—13	23.21	+1	
	9		11.2593ii	30.9410iv	— 3	+ .8	— .4	40 28 4.78	+ 8 17.21	+1.02	+ 8	+15	23.24	+1	29.5
	10		18.5827	24.3290	+ 49	+1.8	+ .5	40 33 57.44	+ 2 25.29	+ 9	+ 37	+ 4	23.23	+1	
	11		27.8710	15.3837	+120	— .9	—1.2	40 31 6.75	+ 5 15.77	+ 16	— 31	+10	22.47	0	
	12		11.4043	32.7450	+261	+ .2	— .7	40 27 22.71	+ 8 59.68	+ 23	— 5	+18	22.75	0	29.1
	IX 4	R	19.3803	21.1673	+ 2	—1.5	—1.7	40 35 38.00	+ 45.15	+ 7	— 47	+ 2	22.77	—9	25.6
	5		19.6880	22.4770	+ 20	— .3	— .6	40 37 32.41	— 1 10.51	+ 5	— 12	— 2	21.81	—8	
	6		24.3017	23.3807	+ 17	+1.1	+ .2	40 36 46.35	— 23.31	+ 8	+ 21	— 1	23.32	—8	
	7		9.4877i	32.9343iv	+ 23	+ .2	+1.0	40 46 16.67	— 9 52.40	— 92	+ 16	—17	23.34	—9	25.3
	X 1		26.8453	14.6623	+ 54	— .5	— .2	40 41 31.60	— 5 7.93	— 3	— 11	— 9	23.44	—9	
	2		31.9047iv	11.5207ii	+ 5	— .2	+1.2	40 27 46.70	+ 8 34.99	+1.04	+ 12	+17	23.02	—8	
	3		22.8323	19.8053	+ 23	— .8	0	40 35 6.71	+ 1 16.53	+ 8	— 13	+ 2	23.21	—9	
	5		10.4587ii	31.1700iv	+ 2	— .7	— .5	40 45 8.03	— 8 43.25	— 85	— 18	—20	23.55	—8	24.6
	6		19.0450	23.7043	+ 38	— .6	—1.3	40 34 25.44	+ 1 57.81	+ 10	— 27	+ 4	23.12	—9	
	7		27.4363	15.9707	+116	— .9	—1.1	40 31 33.52	+ 4 49.95	+ 14	— 29	+ 8	23.40	—9	24.2
Mar.	8		10.6640	30.3123	+ 55	+ .2	+ .2	40 44 39.82	— 8 16.52	— 8	+ 6	—15	23.13	—9	23.9
1	V 2	D	22.8913	18.0143	+ 13	+1.9	+2.2	40 38 25.28	— 2 3.23	+ 3	+ 61	— 4	22.65	+3	34.9
	3		30.1820iv	6.8667ii	— 28	+1.1	+1.9	40 26 31.65	+ 9 48.92	+1.11	+ 43	+24	22.35	+3	
	4		29.1017	14.3083	+147	+2.3	+2.5	40 42 36.74	— 6 14.08	— 4	+ 71	—12	23.21	+3	
	5		8.1820ii	31.4187iv	— 4	+1.1	+1.4	40 26 34.90	+ 9 46.99	+1.06	+ 37	+19	23.51	+3	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Mar. 1	V 6		20.4650	21.8460	+ 10	— 2	— .8	40 36 57.01	— 34.91	+ 12	— 14	— 1	40 36 22.07	+3	34.4
	7		27.9883	12.7530	+ 33	+1.3	+ .4	40 42 47.89	— 6 24.95	— 3	+ 27	—13	23.05	+3	
	8		21.4797	17.3397	— 16	+2.5	+2.3	40 34 37.61	+ 1 44.54	+ 10	+ 72	+ 4	23.01	+3	
	9		27.6783	13.3567	+ 44	+2.2	+ .9	40 42 24.85	— 6 1.90	— 4	+ 49	—10	23.30	+3	
	10		18.0240	21.6593	— 3	+2.6	+3.3	40 37 53.84	— 1 31.83	+ 4	+ 87	— 3	22.89	+3	
	VI 1		15.6463	23.8333	— 14	+ .4	— .2	40 32 56.21	+ 3 26.79	+ 13	+ 4	+ 6	23.23	+3	33.6
	2		24.5393	18.0423	+ 49	+2.2	+2.4	40 33 37.89	+ 2 44.25	+ 11	+ 68	+ 5	22.98	+3	33.8
	3		27.2347	10.8310	— 93	—1.6	—1.1	40 43 17.79	— 6 54.15	— 5	— 41	—13	23.05	+2	
	4		22.2253	16.2377	— 27	+1.9	+2.0	40 33 50.89	+ 2 31.19	+ 10	+ 58	+ 4	22.80	+2	33.8
	5		23.3763	17.6220	+ 17	+1.8	+ .4	40 38 47.61	— 2 25.40	+ 3	+ 35	— 5	22.54	+2	
	6		10.9857^{ii}	32.0203^{iv}	+ 9	— .6	— .4	40 27 30.29	+ 8 51.39	+1.05	— 15	+19	22.77	+2	
	IX 6	D	17.6657	18.6057	— 11	— .6	— .4	40 36 46.32	— 23.72	+ 8	— 15	— 1	22.52	—8	32.3
	7		32.5990^{iv}	9.1590^{ii}	+ 18	+ .3	— .9	40 46 16.64	— 9 52.19	— 92	— 6	—17	23.30	—9	32.3
	X 1		13.5987	25.8327	— 22	—1.3	—1.3	40 41 31.51	— 5 9.00	— 3	— 39	— 9	22.00	—9	31.1
	2		9.5403^{ii}	29.9260^{iv}	0	0	+ .4	40 27 46.58	+ 8 34.99	+1.04	+ 5	+17	22.83	—8	
	3		19.3247	22.3503	+ 16	0	+ .5	40 35 6.58	+ 1 16.48	+ 8	+ 6	+ 2	23.22	—9	
	4		12.7807^{ii}	28.3507^{iv}	— 16	+1.9	+1.8	40 29 48.01	+ 6 33.29	+ 99	+ 55	+11	22.95	—9	
	5		30.0800^{iv}	9.3513^{ii}	— 2	+1.2	+1.1	40 45 7.86	— 8 43.65	— 85	+ 34	—20	23.50	—8	
	6		22 6023	17.9747	+ 8	+ .6	+ .2	40 34 25.20	+ 1 56.92	+ 10	+ 12	+ 4	22.38	—9	
	7		14.2420	25.6970	— 4	+1.0	— .5	40 31 33.24	+ 4 49.37	+ 14	+ 10	+ 8	22.93	—9	29.8
	8		29.5557	9.8980	— 31	+2.0	+1.3	40 44 39.53	— 8 16.52	— 8	+ 51	—15	23.29	—9	29.6
Mar. 6	V 6	R	23.1143	21.7887	+ 19	—3.6	—3.5	40 36 57.06	— 33.53	+ 12	—1.06	— 1	22.58	+3	32.3
	7		13.9377	29.1460	+139	—2.8	—1.9	40 42 47.97	— 6 24.55	— 3	— 72	—13	22.54	+3	
	8		19.0060	23.1660	+ 27	+1.2	+ .8	40 34 37.75	+ 1 45.16	+ 9	+ 31	+ 4	23.35	+3	
	9		13.4760	27.7803	+ 54	—2.2	—1.3	40 42 25.04	— 6 1.49	— 4	— 54	—10	22.87	+3	
	10		22.0450	18.4460	+ 4	+ .8	— .2	40 37 54.08	— 1 30.93	+ 4	+ 11	— 3	23.27	+3	
	VI 1		25.8230	17.6800	+ 83	+ .2	+ .9	40 32 56.49	+ 3 25.92	+ 13	+ 15	+ 6	22.75	+3	32.5
	2		17.8220	24.3147	+ 40	+1.5	+1.6	40 33 38.23	+ 2 44.12	+ 11	+ 46	+ 5	22.97	+3	
	3		13.0907	29.4900	+125	—1.7	—1.3	40 43 18.15	— 6 54.60	— 5	— 46	—13	22.91	+3	32.6
	4		16.3383	22.3380	— 23	+1.9	+ .6	40 33 51.34	+ 2 31.50	+ 10	+ 40	+ 4	23.38	+2	32.4
	5		18.9083	24.6263	+ 61	—2.5	—2.2	40 38 48.09	— 2 24.60	+ 3	— 71	— 5	22.76	+2	32.4
	6		31.8817^{iv}	10.8793^{ii}	+ 8	+ .9	+1.2	40 27 30.77	+ 8 50.58	+1.05	+ 31	+19	22.90	+2	
	7		18.2547	20.9893	— 6	— .4	— .2	40 37 32.12	— 1 9.07	+ 4	— 9	— 2	22.98	+2	
	8		29.3043	12.7720	+101	+ .6	— .7	40 43 21.23	— 6 57.90	— 5	+ 1	—13	23.16	+2	31.9
	9		9.7057^{ii}	29.3433^{iv}	0	—1.0	—2.3	40 28 5.86	+ 8 16.09	+1.02	— 46	+15	22.66	+1	32.2
	10		17.3737	23.0897	+ 8	+ .9	0	40 33 58.55	+ 2 24.41	+ 10	+ 15	+ 4	23.25	+1	31.6
	11		27.5433	15.0923	+ 98	0	0	40 31 7.82	+ 5 14.79	+ 16	0	+10	22.87	+1	
Mar. 7	12		10.2643	31.5980	+117	—1.1	—2.3	40 27 23.91	+ 8 59.23	+ 23	— 48	+18	23.07	0	30.9
	V 6	D	17.8960	19.3007	— 12	+2.3	+3.8	40 36 57.03	— 35.45	+ 12	+ 88	— 1	22.57	+3	36.5
	7		29.1957	13.9573	+142	+1.7	+1.2	40 42 47.95	— 6 25.31	— 3	+ 44	—13	22.92	+3	36.4
	8		21.7667	17.6493	— 8	+4.0	+3.2	40 34 37.74	+ 1 43.99	+ 10	+1.09	+ 4	22.96	+3	
	9		27.6000	13.2557	+ 37	+2.7	+2.0	40 42 25.04	— 6 2.45	— 4	+ 72	—10	23.17	+3	
	10		20.8227	24.4527	+ 55	+3.3	+1.5	40 37 54.08	— 1 31.84	+ 4	+ 76	— 3	23.01	+3	
	VI 1		15.6580	23.8153	— 13	+1.3	— .1	40 32 56.50	+ 3 26 03	+ 13	+ 20	+ 6	22.92	+3	35.8
	2		23.0273	16.5187	— 10	+ .1	— .6	40 33 38.25	+ 2 44.39	+ 11	— 6	+ 5	22.74	+3	
	3		27.1980	10.7780	— 98	—1.7	—1.7	40 43 18.17	— 6 54.55	— 5	— 51	—13	22.93	+3	35.9
	4		23.5397	17.5623	+ 19	— .1	—1.1	40 33 51.38	+ 2 31.05	+ 10	— 15	+ 4	22.42	+2	
	5		22.8730	17.1453	0	—2.0	— .9	40 38 48.13	— 2 24.69	+ 3	— 45	— 5	22.97	+2	
	6		9.6383^{ii}	30.6507^{iv}	+ 1	+ .1	0	40 27 30.81	+ 8 50.81	+1.05	+ 1	+19	22.87	+2	
	7		22.4750	19.7257	+ 20	+ .1	— .4	40 37 32.18	— 1 9.50	+ 4	— 3	— 2	22.67	+2	
	8		11.5623	28.1050	— 18	— .5	— .4	40 43 21.30	— 6 57.85	— 5	— 13	—13	23.14	+2	35.0
	9		30.8263^{iv}	11.2267^{ii}	+ 1	+2.3	+1.8	40 28 5.94	+ 8 15.11	+1.02	+ 62	+15	22.84	+1	34.6
	10		21.5293	15.7893	— 45	— .9	—1.3	40 33 58.69	+ 2 24.89	+ 10	— 32	+ 4	23.40	+1	
	11		12.9670	25.4763	— 57	—1.5	—1.8	40 31 7.91	+ 5 15.86	+ 16	— 48	+10	23.55	+1	
	12		30.4597	9.1467	— 24	+ .4	+ .5	40 27 24.01	+ 8 58.34	+ 23	+ 13	+18	22.89	+1	34.3

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Mar.								° ′ ″					° ′ ″		
7	IX 7	R	9.5637ii	33.0257iv	+ 25	— .2	— .4	40 46 17.09	— 9.52.78	— 92	— 8	—17	40 36 23.14	—8	28.4
	X 1		26.0383	13.8227	— 5	— .7	—1.1	40 41 31.87	— 5 8.59	— 3	— 26	— 9	22.90	—9	
	2		31.8617iv	11.4630ii	+ 4	—1.4	—1.0	40 27 46.86	+ 8 35.34	+1.04	— 37	+17	23.04	—9	28.2
Mar.	3		22.0240	19.0077	+ 9	—1.7	— .7	40 35 6.83	+ 1 16.22	+ 8	— 38	+ 2	22.77	—9	
13	V 8	R	19.3360	23.5513	+ 36	—3.8	—4.7	40 34 37.84	+ 1 46.57	+ 10	—1.25	+ 4	23.30	+3	41.7
	10		22.0520	18.4920	+ 6	—1.1	—1.7	40 37 54.26	— 1 29.94	+ 4	— 41	— 3	23.92	+3	
	VI 1		25.7337	17.5520	+ 78	—1.8	—3.0	40 32 56.72	+ 3 26.87	+ 13	— 69	+ 6	23.09	+3	
	2		18.3197	24.8280	+ 60	+ .6	+1.1	40 33 38.53	+ 2 44.56	+ 11	+ 24	+ 5	23.49	+3	
	3		14.2413	30.6213	+234	—2.4	—1.9	40 43 18.47	— 6 54.35	— 5	— 65	—13	23.29	+3	39.9
	4		17.6960	23.6983	+ 24	— .6	— .9	40 33 51.77	+ 2 31.69	+ 10	— 21	+ 4	23.39	+3	
	5		17.9867	23.7047	+ 29	—1.9	—2.4	40 38 48.54	— 2 24.52	+ 3	— 63	— 5	23.37	+3	
	6		32.2890iv	11.2560ii	+ 11	—1.6	—1.9	40 27 31.22	+ 8 51.34	+1.05	— 52	+19	23.28	+2	
	7		19.3573	22.0983	+ 13	—2.2	—2.6	40 37 32.69	— 1 9.27	+ 4	— 71	— 2	22.73	+2	39.2
	8		28.7650	12.2357	+ 49	—3.4	—3.4	40 43 21.84	— 6 57.66	— 5	—1.02	—13	22.98	+2	39.4
	9		11.6193ii	31.2543iv	— 2	—1.2	—2.1	40 28 6.51	+ 8 15.99	+1.02	— 47	+15	23.20	+2	
	10		17.2973	22.9643	+ 4	—1.0	— .7	40 33 59.33	+ 2 23.17	+ 10	— 26	+ 4	22.38	+2	38.6
	11		27.8617	15.4393	+120	—1.6	—1.3	40 31 8 53	+ 5 14.10	+ 16	— 44	+10	22.45	+1	38.4
	12		9.9917	31.3180	+ 84	—1.9	—2.6	40 27 24.67	+ 8 58.93	+ 23	— 66	+18	23 35	+1	
	IX 7	D	31.2107iv	7.7600ii	— 11	— .9	—1.2	40 46 17.47	— 9 52.38	— 92	— 31	—17	23.69	—8	34.6
	X 1		13.0340	25.2713	— 62	— .6	— .9	40 41 32.17	— 5 8.97	— 3	— 21	— 9	22.87	—8	33.9
	2		8.8367ii	29.2903iv	— 0	—2.0	—3.0	40 27 47.09	+ 8 36.69	+1.04	— 73	+17	24.26	—8	34.0
	3		19.6233	22.6280	+ 19	+ .5	— .2	40 35 7.05	+ 1 15.96	+ 8	+ 6	+ 2	23.17	—9	
	4		12.4800ii	28.0383iv	— 7	+1.0	+ .1	40 29 48.42	+ 6 33.01	+ 99	+ 18	+11	22.71	—9	
Mar.	5		28.9247iv	8.2390ii	— 6	—2.0	—3.1	40 45 8.10	— 8 42.56	— 85	— 74	—20	23.75	—8	34.1
16	VI 1	D	14.8447	23.0047	— 52	+1.2	+ .6	40 32 56.92	+ 3 26.02	+ 13	+ 28	+ 6	23.41	+3	28.0
	2		23.9423	17.4557	+ 26	0	+ .5	40 33 38.75	+ 2 43.94	+ 11	+ 6	+ 5	22.91	+3	
	3		29.1750	12.7430	+ 93	— .6	+ .1	40 43 18.71	— 6 55.35	— 5	— 8	—13	23.10	+3	28.3
	4		21.9350	15.9703	— 36	+2.2	+1.9	40 33 52.07	+ 2 30.60	+ 10	+ 62	+ 4	23.43	+3	
	6		10.0920ii	31.0797iv	+ 4	+ .9	+ .5	40 27 31.53	+ 8 50.22	+1.05	+ 22	+19	23.21	+2	27.7
	9		30.3523iv	10.7953ii	0	+2.5	+3.9	40 28 6.92	+ 8 14.06	+1.02	+ 93	+15	23.08	+2	27.7
Mar.	10		22.2570	16.6390	— 19	+2.7	+3.4	40 33 59.76	+ 2 21.88	+ 10	+ 90	+ 4	22.68	+2	27.6
17	X 2	R	30.7600iv	10.3993ii	0	+ .9	+1.2	40 27 47.38	+ 8 34.38	+1.04	+ 31	+17	23.28	—8	27.0
	3		21.9487	18.9827	+ 8	+1.8	+2.3	40 35 7.34	+ 1 14.95	+ 8	+ 60	+ 2	22.99	—8	
	4		26.5750iv	10.9973ii	+ 32	—2.2	—1.9	40 29 48.69	+ 6 33.62	+ 99	— 62	+11	22.79	—9	
	5		10.8650ii	31.6220iv	+ 5	0	+1.6	40 45 8.28	— 8 44.40	— 85	+ 20	—20	23.03	—7	
	6		18.8243	23.4907	+ 33	+ .9	0	40 34 25.43	+ 1 57.98	+ 10	+ 15	+ 4	23.70	—8	27.0
	7		26.6383	15.1783	+ 61	+ .4	+ .4	40 31 33.31	+ 4 49.67	+ 14	+ 12	+ 8	23.32	—9	
	8		10.0507	29.6780	— 15	0	+ .8	40 44 39.44	— 8 15.80	— 8	+ 10	—15	23.51	—9	
	9		12.8397	30.2703	+156	+1.4	+1.5	40 43 43.41	— 7 20.75	— 5	+ 43	—13	22.91	—9	
	10		32.5117iv	8.4960ii	+ 12	+ .3	0	40 46 31.13	—10 6.74	— 92	+ 5	—17	23.35	—9	26.4
Mar.	XI 1		29.8580	14.2937	+189	— .3	— .2	40 42 57.09	— 6 33.67	— 1	— 7	—14	23.20	—8	26.4
18	VI 1	D	14.9480	23.0873	— 47	+ .8	+2.0	40 32 56.97	+ 3 25.50	+ 13	+ 39	+ 6	23.05	+3	35.5
	2		23.1453	16.6783	— 3	+2.4	+1.4	40 33 38.83	+ 2 43.37	+ 11	+ 59	+ 5	22.95	+3	
	3		12.4300	28.8700	+ 63	— .5	+ .8	40 43 18.80	— 6 55.47	— 5	+ 2	—13	23.17	+3	
	4		16.9543	22.9070	— 3	+ .7	+ .8	40 33 52.20	+ 2 30.37	+ 10	+ 22	+ 4	22.93	+3	34.4
	5		17.5140	23.3120	+ 13	+ .9	+ .9	40 38 49.00	— 2 26.50	+ 3	+ 27	— 5	22.75	+3	
	6		29.0133iv	8.0480ii	— 9	+ .3	+ .4	40 27 31.68	+ 8 49.60	+1.05	+ 10	+19	22.62	+2	
	7		18.5097	21.2970	— 2	+ .1	+1.8	40 37 33.24	— 1 10.41	+ 4	+ 24	— 2	23.09	+3	
	8		30.0120	13.4353	+169	+ .4	+1.2	40 43 22.43	— 6 59.19	— 5	+ 22	—13	23.28	+2	32.5
	9		11.1673ii	30.7207iv	0	+1.6	+3.0	40 28 7.14	+ 8 13.96	+1.02	+ 66	+15	22.93	+2	
	10		17.1277	22.7583	— 2	+2.3	+2.6	40 34 0.01	+ 2 22.23	+ 10	+ 72	+ 4	23.10	+2	32.0
	11		26.5400	14.1423	+ 24	0	+ .4	40 31 9.22	+ 5 13.25	+ 16	+ 5	+10	22.78	+2	31.9
	12		10.1683	31.4440	+101	—2.0	—2.4	40 27 25.41	+ 8 57.72	+ 23	— 65	+18	22.89	+1	
	VII 1		32.3903	17.9533	+442	+1.3	+1.9	40 30 16.48	+ 6 5.82	+ 18	+ 46	+12	23.06	+1	
	2		16.7180	25.6680	+ 64	+ .4	+1.6	40 40 9.01	— 3 46.26	0	+ 27	— 7	22.95	+1	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
Mar.								° ′ ″					° ′ ″		
18	VII 3		22.1717	19.1243	+ 12	+ .8	+ .9	40 35 5.53	+ 1 17.02	+ 8	+ 25	+ 2	40 36 22.90	+1	30.6
	5		29.6657	12.2910	+100	+1.4	+2.6	40 29 2.63	+ 7 19.17	+ 23	+ 57	+13	22.73	0	
	6		28.7360	14.4277	+134	+1.5	+ .9	40 42 24.05	— 6 1.79	— 9	+ 37	—10	22.44	0	
	7		25.8000	13.9420	— 9	+2.3	+2.1	40 41 21.64	— 4 59.54	— 6	+ 66	— 8	22.62	0	29.2
	8		19.4183	21.7807	+ 8	— .1	0	40 37 22.56	— 59.70	+ 3	— 1	— 2	22.86	—1	28.9
	9		26.8167	14.3087	+ 41	+1.6	+2.0	40 31 5.62	+ 5 16.08	+ 22	+ 53	+12	22.57	—1	
	10		19.1637	20.0373	— 3	+1.7	+2.3	40 36 44.45	— 22.06	+ 5	+ 58	— 1	23.01	—1	28.9
	X 2	D	10.2887ii	30.6587iv	0	— .2	+1.3	40 27 47.50	+ 8 34.62	+1.10	+ 13	+17	23.52	—8	26.3
	3		18.4167	21.4193	— 2	+ .4	+ .1	40 35 7.47	+ 1 15.85	+ 9	+ 8	+ 2	23.51	—8	
	4		12.5433ii	28.0977iv	— 9	+ .6	+ .4	40 29 48.81	+ 6 32.94	+1.04	+ 15	+11	23.05	—9	
	5		30.8693iv	10.1347ii	+ 1	0	0	40 45 8.37	— 8 43.83	— 92	0	—20	23.42	—7	
	6		21.3637	16.7063	— 27	— .8	— .8	40 34 25.52	+ 1 57.60	+ 12	— 24	+ 4	23.04	—8	25.9
	7		18.6780	30.0937	+296	+1.2	+ .5	40 31 33.39	+ 4 49.14	+ 18	+ 27	+ 8	23.06	—9	25.6
	9		28.7780	11.3620	+ 7	+ .2	+ .2	40 43 43.46	— 7 20.00	— 11	+ 6	—13	23.28	—9	
	10		7.4307ii	31.4150iv	— 15	—4.1	—4.0	40 46 31.17	—10 5.89	—1.00	—1.21	—17	22.90	—9	24.4
Mar.	XI 1		13.3967	28.9520	+107	— .7	—1.1	40 42 57.11	— 6 33.25	— 6	— 26	—14	23.40	—8	24.5
21	VI 1	D	12.7623	20.9617	—153	—1.0	—1.7	40 32 56.93	+ 3 26.73	+ 16	— 39	+ 6	23.49	+3	44.4*a*
	2		23.5910	17.0833	+ 13	— .8	— .5	40 33 38.83	+ 2 44.42	+ 13	— 20	+ 5	23.23	+3	
	3		27.0720	10.6097	—113	0	+ .8	40 43 18.80	— 6 55.55	— 10	+ 10	—13	23.12	+3	44.0
	4		23.0603	17.0923	+ 2	— .2	— .9	40 33 52.27	+ 2 30.75	+ 12	— 15	+ 4	23.03	+3	44.0
Mar.	5		21.9853	16.2020	— 31	+ .7	+ .3	40 38 49.08	— 2 26.01	+ 1	+ 16	— 5	23.19	+3	43.4
27	VI 2	D	24.4967	17.9857	+ 49	— .9	—1.0	40 33 38.91	+ 2 44.60	+ 13	— 27	+ 4	23.41	+3	
	4		21.4170	15.4333	— 57	—1.3	—2.0	40 33 52.47	+ 2 31.01	+ 12	— 46	+ 4	23.18	+3	40.2
	5		23.3303	17.5667	+ 15	—1.9	—2.7	40 38 49.32	— 2 25.63	+ 1	— 64	— 5	23.01	+3	
	6		9.7427ii	30.7300iv	— 3	—1.6	—1.7	40 27 32.01	+ 8 50.16	+1.12	— 47	+19	23.01	+3	
	7		21.7447	18.9753	+ 6	—1.6	—2.4	40 37 33.72	— 1 9.97	+ 3	— 56	— 2	23.20	+3	
	8		11.2663	27.8787	— 42	—1.0	—2.2	40 43 22.96	— 6 59.54	— 10	— 44	—13	22.75	+3	38.6
	9		29.4730iv	9.9280ii	— 00	— .5	—1.1	40 28 7.75	+ 8 13.73	+1.09	— 22	+15	22.50	+3	
	10		23.3143	17.6467	+ 15	—3.2	—3.1	40 34 0.73	+ 2 23.21	+ 12	— 90	+ 4	23.20	+2	38.1
	11		13.9233	26.3200	+ 7	— .8	—1.0	40 31 9.94	+ 5 13.17	+ 20	— 25	+10	23.16	+2	38.2
	12		30.6153	9.4080	0	+ .1	+1.0	40 27 26.21	+ 8 55.72	+ 30	+ 14	+17	22.54	+2	
	VII 1		11.5383	26.0230	—105	— .6	— .8	40 30 17.29	+ 6 5.63	+ 23	— 20	+12	23.07	+2	
	2		24.0440	15.0730	— 24	— .1	+ .1	40 40 9.69	— 3 46.55	— 3	0	— 7	23.04	+2	37.9
	3		19.2937	22.3127	+ 14	+1.3	+1.5	40 35 6.53	+ 1 16.29	+ 9	+ 40	+ 2	23.33	+2	37.5
	4		15.0590	24.0423	— 24	+ .3	— .2	40 40 9.94	— 3 46.86	+ 2	+ 2	— 8	23.04	+1	
	5		12.7343	30.1117	+145	—1.0	—1.6	40 29 3.79	+ 7 19.33	+ 23	— 36	+13	23.12	+1	
	6		13.3923	27.7440	+ 49	+1.2	+1.9	40 42 25.27	— 6 2.66	— 9	+ 43	—10	22.85	+1	
	7		13.0550	24.9710	— 70	+1.7	+2.1	40 41 22.94	— 5 0.84	— 7	+ 54	— 8	22 49	+1	36.7
	8		22.1000	19.6830	+ 12	+ .3	0	40 37 23.90	— 1 1.08	+ 2	+ 5	— 2	22.87	0	
	9		11.6907	24.2183	—151	— .4	— .3	40 31 6.81	+ 5 16.08	+ 22	— 10	+12	23.13	0	36.2
	10		22.8017	21.8937	+ 15	+ .7	+ .5	40 36 45.81	— 22.97	+ 5	+ 18	— 1	23.06	0	35.6
	X 6	R	18.1933	22.8093	+ 14	0	+ .1	40 34 26.28	+ 1 56.64	+ 12	+ 2	+ 4	23.10	—8	32.2
	7		26.6067	15.1850	+ 61	— .2	— .3	40 31 34.11	+ 4 48.69	+ 18	— 7	+ 9	23.00	—9	31.7
	8		11.4257	31.0917	+145	+ .2	+1.3	40 44 40.16	— 8 17.17	— 15	+ 20	—15	22.89	—8	
	9		11.8483	29.3157	+ 59	+ .9	+1.5	40 43 44.04	— 7 21.42	— 11	+ 34	—13	22.72	—9	
	10		33.1717iv	9.1343ii	+ 28	+1.6	+1.3	40 46 31.66	—10 7.31	—1.00	+ 42	—18	23.59	—9	31.5
	XI 1		29.7083	14.1197	+173	— .6	—1.3	40 42 57.43	— 6 34.24	— 6	— 26	—14	22.73	—8	30.8*b*
Mar.	2		10.6447ii	34.7193iv	+ 64	+2.8	+2.5	40 46 31.36	—10 8.34	— 95	+ 76	—23	22.60	—8	30.6
28	VI 2	R	17.2440	23.7123	+ 17	+1.5	+1.4	40 33 38.96	+ 2 43.45	+ 13	+ 42	+ 4	23.00	+3	34.4*a*
	3		12.4360	28.8963	+ 65	+ .7	+ .9	40 43 18.97	— 6 55.99	— 10	+ 22	—13	22.97	+3	*a*
	4		17.6047	23.5400	+ 20	+ .6	+ .8	40 33 52.54	+ 2 29.98	+ 12	+ 20	+ 4	22.88	+3	33.6
	5		17.5010	23.3093	+ 13	+1.1	+ .9	49 38 49.39	— 2 26.76	+ 1	+ 29	— 5	22.88	+3	
	6		30.5127iv	9.5893ii	0	+3.0	+3.6	40 27 32.09	+ 8 48.57	+1.12	+ 93	+19	22.90	+3	
	7		18.3843	21.2270	— 4	+3.0	+3.1	40 37 33.80	— 1 11.81	+ 3	+ 86	— 2	22.86	+3	
	8		28.7493	12.1027	+ 41	+2.3	+2.6	40 43 23.06	— 7 0.63	— 11	+ 70	—13	22.89	+3	32.2

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Mar. 28	VI 9		10.9057ii	30.4727iv	0	−2.1	−4.2	40 28 7.86	+ 8 14.31	+1.09	− 86	+15	40 36 22.55	+3	
	11		26.9287	14.5750	+ 55	− .4	+ .8	40 31 10.07	+ 5 12.22	+ 20	+ 4	+10	22.63	+2	31.7
	12		10.4860	31.6947	+136	− .2	− .2	40 27 26.35	+ 8 56.12	+ 30	− 6	+17	22.88	+2	31.0
	VII 1		29.1533	14.7393	+165	+1.4	+2.0	40 30 17.42	+ 6 4.54	+ 23	+ 48	+12	22.79	+2	31.6
	2		15.4440	24.4530	− 3	+1.2	+1.8	40 40 9.84	− 3 47.58	− 3	+ 42	− 7	22.58	+2	
	3		22.0983	19.1050	+ 10	+1.8	+1.7	40 35 6.68	+ 1 15.65	+ 9	+ 50	+ 2	22.94	+2	
	4		26.5877	17.5987	+111	+1.7	+1.9	40 40 10.08	− 3 47.36	+ 2	+ 51	− 8	23.17	+1	31.6
	5		28.4000	11.0507	− 28	+ .3	+1.5	40 29 3.96	+ 7 18.21	+ 23	+ 24	+13	22.77	+1	
	6		27.9433	13.5910	+ 66	+1.7	+2.1	40 42 25.45	− 6 2.73	− 9	+ 54	−10	23.07	+1	
	7		26.0813	14.2127	+ 9	−1.4	−1.2	40 41 23.11	− 4 59.85	− 6	− 38	− 8	22.74	+1	
	8		19.4710	21.9060	+ 9	+1.7	+2.3	40 37 24.09	− 1 1.54	+ 2	+ 56	− 2	23.11	0	29.6
	9		27.5290	15.0490	+ 95	−1.2	− .6	40 31 6.98	+ 5 15.51	+ 22	− 26	+12	22.57	0	
	10		19.6797	20.5950	0	−1.4	−1.4	40 36 45.99	− 23.12	+ 5	− 40	− 1	22.51	0	29.9
	X 6	D	21.2377	16.6340	− 31	+ .7	+ .8	40 34 26 35	+ 1 56.23	+ 12	+ 21	+ 4	22.95	−8	25.4
	7		14.6687	26.0840	+ 27	+1.0	+ .7	40 31 34.20	+ 4 48.46	+ 18	+ 25	+ 9	23.18	−9	
	8		29.2343	9.5520	− 71	− .7	+ .1	40 44 40.23	− 8 17.06	− 15	− 10	−15	22.77	−8	
	9		27.9220	10.4637	− 85	+1.4	+1.1	40 43 44.09	− 7 20.84	− 11	+ 36	−13	23.37	−9	
	10		7.7790ii	31.8500iv	− 4	+ .1	+ .5	40 46 31.69	−10 8.11	−1.00	+ 8	−18	22.48	−9	24.8
	XI 1		10.8140	26.4750	−126	+2 8	+2.4	40 42 57.45	− 6 35.33	− 6	+ 74	−10	22.70	−8	24.5
	2		30.4447iv	6.4053ii	− 38	+1.5	− .4	40 46 31.38	−10 7.22	− 95	+ 19	−11	23.29	−8	
Mar. 29	3		32.5147iv	6.8353ii	− 12	−3.0	−3.2	40 25 33.34	+10 48.72	+1.12	− 88	+18	22.48	−9	24.4*a*
	VI 2	D	23.6147	17.1027	+ 13	−1.0	− .3	40 33 39.00	+ 2 44.53	+ 13	− 20	+ 4	23.50	+3	38.9*a*
	3		28.3053	11.8753	+ 9	− .6	−1.6	40 43 19.02	− 6 55.07	− 10	− 30	−13	23.42	+3	*a*
	4		23.6710	17.6970	+ 24	−2.0	−2.8	40 33 52.61	+ 2 30.97	+ 12	− 68	+ 4	23.06	+3	37.9
	5		21.3797	15.5850	− 52	+ .5	− .1	40 38 49.46	− 2 26.25	+ 1	+ 6	− 5	23.23	+3	37.5
	6		8.6937ii	29.6623iv	− 4	−1.0	−1.2	40 27 32.17	+ 8 49.69	+1.12	− 31	+19	22.86	+3	37.1
	7		21.3360	18.5330	− 2	−1.0	− .3	40 37 33.89	− 1 10.80	+ 3	− 20	− 2	22.90	+3	36.7
	8		11.6307	28.2380	− 7	−2.7	−2.7	40 43 23.16	− 6 59.51	− 10	− 77	−13	22.65	+3	36.2
	9		29.7680iv	10.2157ii	0	+ .1	− .3	40 27 7.97	+ 8 13.92	+1.09	− 2	+15	23.11	+3	36.1
	10		21.5077	15.8360	− 44	−3.0	−3.6	40 34 0.97	+ 2 23.15	+ 12	− 93	+ 4	23.35	+3	35.6
	11		13.5190	25.9303	− 22	−1.7	−3.5	40 31 10.19	+ 5 13.47	+ 20	− 71	+10	23.25	+2	
	12		30.5833	9.3620	− 4	− .7	−1.5	40 27 26.49	+ 8 56.07	+ 30	− 30	+17	22.73	+2	34.4
	VII 1		13.6290	28.0943	+ 73	− .7	−1.3	40 30 17.57	+ 6 5.59	+ 23	− 28	+12	23.23	+2	
	2		24.4860	15.5193	+ 1	−1.1	−2.6	40 40 10.48	− 3 46.52	− 3	− 50	− 7	23.36	+2	
	3		18.1113	21.1547	− 7	−1.5	−1.4	40 55 6.85	+ 1 16.87	+ 9	− 42	+ 2	23.41	+2	
	4		14.8383	23.8090	− 36	−2.9	−3.4	40 40 10.22	− 3 46.53	+ 2	− 89	− 8	22.74	+1	33.9
	5		11.0563	28.4340	− 25	+ .1	− .7	40 29 4.14	+ 7 18.92	+ 23	− 8	+13	23.34	+1	
	6		12.3207	26.6853	− 42	+ .2	+ .2	40 42 25.64	− 6 2.76	− 9	+ 6	−10	22.75	+1	
	7		14.2857	26.1757	+ 16	+ .7	+ .4	40 41 23.31	− 5 0.40	− 7	+ 16	− 8	22.92	+1	32.7
	8		21.6757	19.2763	+ 7	−1.7	−2.3	40 37 24.29	− 1 0.63	+ 2	− 56	− 2	23.10	+1	
	9		13.1687	25.6993	− 42	−1.9	−2.2	40 31 7.16	+ 5 16.43	+ 22	− 58	+12	23.35	0	32.0
	10		20.9560	20.0527	+ 3	−2.2	−2.8	40 36 46.21	− 22.82	+ 5	− 70	− 1	22.73	0	32.0
	X 6	R	18.9717	23.6403	+ 36	−4.8	−5.1	40 34 26.45	+ 1 58.03	+ 12	−1.41	+ 4	23.23	−8	28.4
	7		25.0830	13.6510	− 42	− .3	− .5	40 31 33.46	+ 4 48.69	+ 18	− 12	+ 9	22.30	−8	28.4
	9		11.7090	29.1400	+ 42	− .8	0	40 43 44.17	− 7 20.46	− 11	− 12	−13	23.35	−8	
	10		32.4283iv	8.3993ii	+ 10	− .5	− .8	40 46 31.75	−10 7.06	−1.00	− 18	−18	23 33	−9	28.0
	XI 1		29.6497	14.0797	+171	− .4	+ .3	40 42 57.49	− 6 33.78	− 6	− 1	−14	23.50	−8	
	2		9.8973ii	33.9103iv	+ 47	−1.0	−1.0	40 46 31.39	−10 6.76	− 95	− 28	−23	23.17	−8	28.0
Apr. 2	3		6.8993ii	32.5763iv	− 8	−1.3	−1.8	40 26 33.35	+10 48.65	+1.14	− 43	+18	22.89	−9	27.9
	VI 6	R	31.9250iv	10.9870ii	+ 8	+1.2	+1.6	40 27 32.33	+ 8 48.91	+1.12	+ 39	+19	22.94	+3	49.8
	7		19.1510	21.9447	+ 9	− .9	−1.4	40 37 34.12	− 1 10.59	+ 3	− 32	− 2	23.22	+3	48.3
	8		28.7077	12.0790	+ 38	+1.2	+ .4	40 43 23.43	− 7 0.13	− 11	+ 24	−13	23.30	+3	46.7
	9		10.6883ii	30.1990iv	0	0	− .2	40 28 8.29	+ 8 12.83	+1.09	− 2	+15	22.34	+3	45.8
	10		17.7333	23.2953	+ 16	+3.7	+3.8	40 34 1.35	+ 2 20.53	+ 12	+1.07	+ 4	23.11	+3	45.0
	11		26.6340	14.3080	+ 32	+ .4	+1.4	40 30 10.58	+ 5 11.43	+ 20	+ 24	+10	22.55	+3	44.9

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Apr.								° ′ ″					° ′ ″		
2	VI 12	R	10.3947	31.5660	+123	+1.1	+1.6	40 27 26.92	+ 8 55.09	+ 30	+ 38	+17	40 36 22.86	+2	43.9
	VII 1		28.9157	14.4910	+145	— .3	— .3	40 30 18.02	+ 6 4.73	+ 23	— 9	+12	23.01	+2	
	2		16.6147	25.6417	+ 59	+ .8	+1.2	40 40 10.53	— 3 48.17	— 4	+ 28	— 7	22.53	+2	
	3		21.8100	18.8107	+ 6	—1.5	— .8	40 35 7.41	+ 1 15.78	+ 9	— 34	+ 2	22.96	+2	43.7
	4		25.7553	16.7373	+ 66	+1.4	+1.3	40 40 10.75	— 3 47.96	+ 2	+ 39	— 8	23.12	+2	
	5		29.0607	11.7183	+ 38	— .8	— .5	40 29 4.79	+ 7 18.16	+ 23	— 19	+13	23.12	+2	
	6		27.2020	12.7930	0	+1.6	+2.5	40 42 26.33	— 6 3.97	— 9	+ 57	—10	22.74	+2	42.6
	7		25.7743	13.8213	— 15	+1.9	+1.5	40 41 24.05	— 5 1.89	— 7	+ 49	— 8	22.50	+1	42.4
	8		20.9037	23.3543	+ 32	— .6	+ .5	40 37 25.06	— 1 1.98	+ 2	— 3	— 2	23.05	+1	
	9		26.9260	14.4497	+ 49	— .2	— .6	40 31 7.89	+ 5 15.27	+ 22	— 10	+12	23.40	+1	
Apr.	10		20.3080	21.2257	+ 3	—2.4	—2.1	40 36 47.01	— 23.19	+ 5	— 64	— 1	23.22	0	41.0
4	VI 10	D	22.5890	16.9793	— 6	+ .3	+ .4	40 34 1.44	+ 2 21.66	+ 12	+ 10	+ 4	23.36	+3	65.0
	11		13.1933	25.5533	— 45	+2.3	+ .2	40 31 10.68	+ 5 12.14	+ 20	+ 39	+10	23.51	+3	64.2
	12		30.9990	9.8063	+ 50	— .8	—1.4	40 27 27.06	+ 8 55.38	+ 30	— 30	+17	22.61	+2	64.2
	VII 3		16.9900	19.9953	— 27	+1.0	+ .2	40 35 7.60	+ 1 15.83	+ 9	+ 18	+ 2	23.72	+2	62.5
	4		13.2367	22.2720	—119	—1.0	— .5	40 40 10.91	— 3 47.90	+ 2	— 22	— 8	22.73	+2	
	5		9.9990	27.3330	—135	+ .3	+ .1	40 29 5.01	+ 7 17.45	+ 23	+ 6	+13	22.88	+2	61.6
	X 7	D	12.8403	24.2350	— 98	—1.2	—2.2	40 31 35.27	+ 4 47.58	+ 18	— 46	+ 9	22.66	—8	47.6
	8		28.3890	8.6793	—169	—1.9	—2.6	40 44 41.22	— 8 17.43	— 15	— 63	—15	22.86	—8	47.3
	9		28.6300	11 1850	— 10	—1.8	—2.7	40 43 45.01	— 7 20.63	— 11	— 62	—13	23.52	—8	
	10		7.0413ii	31.1433iv	— 23	+1.4	+1.0	40 46 32.52	—10 8.75	—1.00	+ 35	—18	22.94	—9	46.2
	XI 1		13.4543	29.1017	+117	+1.2	+1.0	40 42 58.13	— 6 35.54	— 6	+ 32	—14	22.71	—8	
	2		31.6647iv	7.5887ii	— 9	0	+ .2	40 46 31.91	—10 8.13	— 95	+ 2	—23	22.62	—8	
	3		31.6863iv	6.0790ii	— 36	+ .4	+1.2	40 25 33.87	+10 46.75	+1.14	+ 22	+18	22.16	—9	45.1
	4		31.8627iv	6.4097ii	— 28	— .3	0	40 25 38.94	+10 42.87	+1.14	— 5	+19	23.09	—9	
Apr.	5		33.8527iv	0.5550ii	—220	—1.7	— .8	40 22 20.84	+14 0 54	+1.23	— 37	+26	22.50	—9	40.6
16	VII 1	D	11.6150	26.0217	—103	+ .6	— .2	40 30 19.10	+ 6 3.64	+ 28	+ 7	+12	23.21	+3	48.6
	2		23.8663	14.8340	— 36	—1.8	—1.1	40 40 11.95	— 3 48.05	— 7	— 42	— 7	23.34	+3	
	3		17.9687	20.9293	— 9	— .8	— .6	40 35 8.82	+ 1 14.76	+ 10	— 20	+ 2	23.50	+3	48.4
	4		14.3690	23.4060	— 58	—2.4	—3.2	40 40 12.06	— 3 48.12	— 2	— 78	— 8	23.06	+3	
	5		11.0513	28.3307	— 30	+ .3	0	40 29 6.50	+ 7 16.39	+ 29	+ 5	+13	23.36	+3	
	6		13.2153	27.6683	+ 38	—1.0	—2.1	40 42 28.19	— 6 5.16	— 14	— 42	—10	22.37	+3	48.2
	7		13.8350	25.8057	— 14	—1.8	—1.0	40 41 26.11	— 5 2.33	— 11	— 41	— 8	23.18	+3	
	8		20.8513	18.3187	— 6	0	— .9	40 37 27.22	— 1 3.96	+ 2	— 12	— 2	23.14	+2	48.1
	9		13.0357	25.4433	— 55	+ .7	0	40 31 9.88	+ 5 13.26	+ 26	+ 11	+12	23.63	+2	48.3
	10		19.5830	18.5403	— 5	0	—1.2	40 36 49.31	— 26.33	+ 5	— 15	— 1	22.87	+2	
Apr.	VIII 2		25.5227	13.2937	— 43	+ .5	+ .8	40 31 13.40	+ 5 8.78	+ 27	+ 18	+11	22.74	+1	47.8
17	X 7	R	24.6957	13.4067	— 63	+ .6	+ .3	40 31 37.55	+ 4 45.00	+ 22	+ 14	+ 9	23.00	—7	43.0
	8		9.5677	29.3697	— 63	+1.0	+ .4	40 44 43.38	— 8 20.04	— 21	+ 21	—15	23.19	—7	
	9		11.4977	29.0417	+ 27	—2.8	— .5	40 43 47.06	— 7 23.23	— 17	— 51	—13	23.02	—7	43.1
	10		32.5667iv	8.4353ii	+ 13	— .4	—1.7	40 46 34.48	—10 9.59	—1.08	— 28	—18	23.35	—8	
	XI 1		29.8470	14.2003	+186	— .7	—2.1	40 42 59.74	— 6 35.71	— 12	— 38	—14	23.39	—7	43.2
	2		9.8020ii	33.9060iv	+ 44	+1.0	+ .3	40 46 33.33	—10 8.98	—1.03	+ 20	—23	23.29	—7	42.6
	3		6.0847ii	31.6813iv	— 37	— .2	— .7	40 25 35.38	+10 46.48	+1.23	— 12	+18	23.15	—8	
	4		7.4980ii	32.9333iv	+ 5	—1.5	—3.3	40 25 40.37	+10 42.51	+1.22	— 66	+19	23.63	—8	
	5		0.9127ii	34.2063iv	—191	—1.4	—4.0	40 22 22.13	+14 0.51	+1.34	— 73	+26	23.51	—8	
	6		27.0400	14.9113	+ 70	—2.1	—1.5	40 31 16.52	+ 5 6.54	+ 24	— 52	+10	22.88	—8	
Apr.	7		19.2760	22.2503	+ 14	—1.2	—2.6	40 37 38.73	— 1 15.17	+ 2	— 52	— 2	23.04	—9	42.1
18	X 7	D	14.2883	25.5953	— 4	—3.5	—4.8	40 31 37.79	+ 4 45.61	+ 22	—1.16	+ 9	22.55	—7	43.2
	8		30.0163	10.2443	+ 10	—1.0	—1.6	40 44 43.60	— 8 19.47	— 21	— 36	—15	23.41	—7	
	9		27.8867	10.3497	— 91	—3 0	—3.8	40 43 47.28	— 7 22.76	— 17	— 96	—13	23.26	—7	43.2
	10		6.7390ii	30.9000iv	— 29	— .4	0	40 46 34.70	—10 10.24	—1.09	— 6	—18	23.13	—8	
	XI 1		10.8250	26.5433	—123	+ .3	+ .4	40 42 59.93	— 6 36.74	— 12	+ 10	—14	23.03	—7	42.8
	2		30.0270iv	5.9187ii	— 50	+1.6	+ .1	40 46 33.52	—10 8.85	—1.03	+ 27	—23	23.68	—7	42.7
	3		32.1607iv	6.5737ii	— 21	—1.5	—1.6	40 25 35.58	+10 46.28	+1.23	— 44	+18	22.83	—8	42.3

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Apr. 18	XI 4	D	32.4740iv	7.0843ii	— 7	— .2	— .1	40 25 40.56	+10 41.34	+1.22	— 5	+19	40 36 23.26	—8	41.9
	5		33.7367iv	0.4973ii	—227	+1.0	+1.0	40 22 22.30	+13 59.06	+1.33	+ 28	+26	23.23	—8	41.5
Apr.	6		13.4480	25.5883	— 34	+1.0	+ .2	40 31 16.69	+ 5 6.58	+ 24	+ 18	+10	23.79	—8	41.2
23	XI 2	R	9.1380ii	33.2663iv	+ 30	+1.4	— .7	40 46 34.24	—10 9.57	—1.03	+ 14	—23	23.55	—7	40.0
	3		7.3767ii	32.9147iv	+ 4	+1.1	+ .7	40 25 36.39	+10 45.11	+1.22	+ 26	+18	23.16	—8	
	4		7.2683ii	32.6493iv	— 2	— .4	—1.1	40 25 41.34	+10 41.13	+1.22	— 20	+19	23.68	—8	
	5		1.8883ii	35.0980iv	—117	+ .5	+ .5	40 22 23.04	+13 58.60	+1.34	+ 14	+26	23.38	—8	41.0
	6		26.7877	14.6753	+ 54	—3.8	—2.7	40 31 17.39	+ 5 6.10	+ 24	— 94	+10	22.89	—8	
Apr.	7		18.0780	21.1077	— 7	—1.4	— .7	40 37 39.60	— 1 16.51	+ 2	— 32	— 2	22.77	—8	40.4
24	VII 3	R	21.1083	18.1940	— 6	+ .8	+ .9	40 35 9.26	+ 1 13.60	+ 10	+ 24	+ 2	23.22	+3	51.4
	4		24.2553	15.1580	— 15	+1.0	+1.3	40 40 12.43	— 3 49.75	— 2	+ 32	— 8	22.90	+3	50.6
	5		26.8700	9.6177	—179	— .4	— .7	40 29 7.11	+ 7 15.33	+ 29	— 16	+13	22.70	+4	
	6		27.5333	13.0393	+ 25	+1.4	+1.4	40 42 28.89	— 6 6.17	— 14	+ 40	—10	22.88	+3	49.8
	7		25.3900	13.3610	— 45	0	— .3	40 41 26.92	— 5 3.73	— 11	— 4	— 8	22.96	+3	49.6
	8		18.7850	21.3710	+ 2	— .4	—1.2	40 37 28.09	— 1 5.33	+ 1	— 22	— 2	22.53	+3	
	9		27.0090	14.6690	+ 61	0	— .7	40 31 10.69	+ 5 11.85	+ 26	— 9	+12	22.83	+3	
	10		20.2883	21.3737	+ 5	— .1	— .2	40 36 50.29	— 27.43	+ 5	— 4	— 1	22.86	+3	
	VIII 1		22.6843	19.4083	+ 20	+1.3	+ .2	40 37 45.47	— 1 22.80	+ 1	+ 23	— 2	22.89	+2	48.8
	2		15.0950	27.2827	+ 87	+ .8	— .3	40 31 14.37	+ 5 8.07	+ 27	+ 8	+11	22.90	+2	48.4
	3		14.5170	26.8457	+ 49	—1.0	— .4	40 41 34.90	— 5 11.53	— 11	— 21	— 9	22.96	+2	*a*
	4		14.5590	22.9180	— 63	+ .7	+ .3	40 32 51.67	+ 3 30.98	+ 17	+ 15	+ 6	23.03	+2	47.6
	5		31.6150iv	11.8770ii	— 4	—2.0	—1.8	40 28 3.52	+ 8 18.56	+1.16	— 54	+17	22.87	+1	
	6		19.6313	22.6663	+ 20	—1.7	— .6	40 37 39.94	— 1 16.71	+ 3	— 34	— 3	22.89	+1	
	7		11.0533ii	26.9970iv	+ 23	+ .6	— .2	40 29 38.64	+ 6 42.78	+1.09	+ 7	+11	22.69	+1	46.8
	8		21.1203	20.3557	+ 3	— .9	— .6	40 36 3.10	+ 19.32	+ 11	— 22	+ 1	22.32	+1	
	9		27.9647	14.1697	+ 88	—2.3	—2.0	40 30 34.15	+ 5 48.67	+ 27	— 62	+11	22.58	0	
	10		5.4050ii	33.1010iv	— 35	+2.2	+1.1	40 48 2.84	—11 39.48	—1.11	+ 49	—24	22 50	0	46.4
Apr.	11		28.6130	13.2637	+ 86	+1.0	+ .2	40 42 50.97	— 6 27.93	— 16	+ 18	—11	22.95	0	46.0
25	VII 6	D	12.2833	26.7953	— 39	+1.0	+ .5	40 42 29.02	— 6 6.46	— 14	+ 22	—10	22.54	+4	48.3
	7		13.4590	25.5140	— 37	+1.7	+2.2	40 41 27.06	— 5 4.40	— 11	+ 54	— 8	23.01	+3	48.2
	XI 2	D	30.4190iv	6.2177ii	— 42	+1.8	+2.2	40 46 34.50	—10 11.24	—1.04	+ 56	—23	22.55	—6	41.0
	3		32.4163iv	6.8907ii	— 11	—2.0	—1.2	40 25 36.69	+10 44.77	+1.22	— 47	+18	22.39	—8	40.6
	4		31.4093iv	6.0507ii	— 40	+ .2	— .2	40 25 41.63	+10 40.48	+1.22	0	+19	23.52	—8	
	5		34.4307iv	1.2147ii	—170	—2.9	—2.2	40 22 23.31	+13 58.64	+1.34	— 74	+26	22.81	—8	39.6
	6		12.6103	24.6767	— 97	+ .1	0	40 31 17.64	+ 5 4.56	+ 24	+ 2	+10	22.56	—8	
	7		22.7733	19.7330	+ 23	— .5	— .7	40 37 39.84	— 1 16.86	+ 2	— 17	— 2	22.81	—8	
	8		20.2313	21.1753	+ 3	+ .3	+ .4	40 36 46.37	— 23.85	+ 5	+ 10	— 1	22.66	—8	
	I 1		23.8343	16.5357	+ 6	+1.2	+ .9	40 33 17.38	+ 3 4.39	+ 16	+ 30	+ 5	22.28	—8	38.2*a*
Apr.	2		25.8817	12.8440	— 50	— .1	+ .3	40 41 52.33	— 5 29.21	— 12	+ 2	—10	22.92	—8	38.0
28	VII 4	D	14.7163	23.8650	— 39	+3.2	+4.2	40 40 12.77	— 3 50.97	— 2	+1.04	— 9	22.73	+3	61.1
	5		13.2770	30.4750	+192	+ .4	+ .2	40 29 7.56	+ 7 14.86	+ 29	+ 9	+12	22.92	+4	60.4
	6		12.0063	26.5483	— 62	+1.7	+1.8	40 42 29.40	— 6 7.14	— 14	+ 50	—10	22.52	+4	
	7		13.4487	25.5310	— 36	+1.6	+ .9	40 41 27.48	— 5 5.07	— 11	+ 37	— 8	22.59	+3	59.9
	8		20.9240	18.2960	— 6	+1.9	+1.4	40 37 28.69	— 1 6.36	+ 2	+ 48	— 2	22.81	+4	59.4
	9		14.7930	27.1147	+ 69	+ .3	— .4	40 31 11.26	+ 5 11.39	+ 26	0	+12	23.03	+3	
	10		19.8907	18.7520	— 4	+2.5	+1.4	40 36 50.95	— 28.75	+ 4	+ 58	— 1	22.81	+3	
	VIII 1		17.3537	20.6773	— 20	+ .7	+ .8	40 37 46.17	— 1 23.89	+ 1	+ 21	— 2	22.48	+3	59.0
	2		25.5067	13.3463	— 41	+ .6	+1.0	40 31 15.04	+ 5 7.03	+ 27	+ 22	+11	22.67	+2	
	4		24.5570	16.2133	+ 19	—2.1	—2.3	40 32 52.48	+ 3 30.79	+ 17	— 62	+ 6	22.88	+2	58.1
	5		8.6390ii	28.3417iv	+ 3	+ .9	+ .4	40 28 4.33	+ 8 17.64	+1.16	+ 20	+17	23.50	+2	57.6
	6		21.3817	18.3140	— 3	+ .2	0	40 37 40.79	— 1 17.47	+ 3	+ 3	— 3	23.35	+2	
	7		27.3417iv	11.4307ii	+ 16	— .9	— .5	40 29 39.54	+ 6 41.91	+1.09	— 21	+11	22.44	+1	
	8		20.0020	20.7543	+ 3	—2.1	—2.0	40 36 3.90	+ 19.01	+ 11	— 58	+ 1	22.45	+1	
	9		13.2403	27.0080	+ 10	—1.0	— .4	40 30 35.02	+ 5 47.76	+ 27	— 21	+11	22.95	+1	56.0
	10		31.8307iv	4.1453ii	— 92	— .8	—1.3	40 48 3.73	—11 39.02	—1.11	— 29	—24	23.07	0	56.0

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
Apr.								° ′ ″					° ′ ″		
28	VIII 11	D	15.1057	30.4810	+255	—1.1	— .6	40 42 51.97	— 6 28.98	— 16	— 25	—11	40 36 22.47	0	54.5
May 6	VII 7	R	26.6633	14.5963	+ 44	— .9	—1.2	40 41 28.10	— 5 4.90	— 11	— 30	— 8	22.71	+4	54.4
	8		19.4343	22.0700	+ 11	+ .6	+ .7	40 37 29.39	— 1 6.60	+ 2	+ 18	— 2	22.97	+4	
	9		26.6337	14.3560	+ 35	+ .7	+ .7	40 31 11.93	+ 5 10.19	+ 26	+ 20	+12	22.70	+4	53.4
	10		19.1437	20.2967	— 2	—1.0	— .8	40 36 51.80	— 29.12	+ 4	— 26	— 1	22.45	+4	
	VIII 1		22.6197	19.3027	+ 19	— .2	— .7	40 37 47.12	— 1 23.83	+ 1	— 12	— 2	23.16	+4	
	2		14.9793	27.0983	+ 75	+1.3	+1.9	40 31 15.94	+ 5 6.29	+ 27	+ 44	+11	23.05	+3	52.5
	3		14.1710	26.5607	+ 26	+ .6	+ .7	40 41 36.87	— 5 13.01	— 11	+ 18	— 9	23.84	+3	
	4		16.1910	24.4807	+ 18	— .7	—1.2	40 32 53.68	+ 3 29.43	+ 17	— 26	+ 6	23.08	+3	
	5		32.0417iv	12.4197ii	— 6	+1.1	+1.3	40 28 5.52	+ 8 15.60	+1.16	+ 34	+17	22.79	+3	51.0
	6		19.0667	22.2127	+ 12	+ .4	+ .5	40 37 42.11	— 1 19.50	+ 3	+ 13	— 3	22.74	+2	
	7		13.7257ii	29.5737iv	— 39	+2.1	+1.8	40 29 40.98	+ 6 40.20	+1.09	+ 56	+11	22.94	+2	51.2
	8		22.4927	21.8160	+ 11	— .6	+ .2	40 36 5.16	+ 17.12	+ 11	— 7	+ 1	22.33	+2	
	9		27.1243	13.4247	+ 20	+ .2	— .7	40 30 36.45	+ 5 46.08	+ 27	— 6	+11	22.85	+2	50.5
	10		3.5663ii	31.3400iv	—117	+ .3	0	40 48 5.23	—11 41.22	—1.12	+ 5	—24	22.70	+1	50.2
	11		30.6947	15.2903	+273	—1.2	—3.0	40 42 53.70	— 6 29.78	— 16	— 57	—11	23.08	+1	49.0
	XI 2	R	8.1623ii	32.3707iv	+ 8	—1.8	—3.2	40 46 36.72	—10 11.52	—1.04	— 69	—23	23.24	—5	46.1
	3		5.6883ii	31.1457iv	— 51	—2.0	—2.4	40 25 39.16	+10 42.91	+1.22	— 62	+18	22.85	—7	
	4		8.1000ii	33.3773iv	+ 24	—1.7	—2.2	40 25 44.02	+10 38.55	+1.22	— 54	+19	23.44	—7	
	5		0.0577ii	33.1947iv	—261	+ .4	— .9	40 22 25.58	+13 56.36	+1.34	— 5	+26	23.49	—7	
	6		27.4563	15.4887	+105	—1.7	—1.6	40 31 19.82	+ 5 2.56	+ 24	— 47	+10	22.25	—7	
	7		19.3490	22.4720	+ 17	—1.1	—1.2	40 37 42.02	— 1 18.93	+ 2	— 32	— 2	22.77	—7	46.7
	8		20.3020	19.2727	0	—1.2	—1.4	40 36 48.45	— 26.00	+ 5	— 36	— 1	22.13	—8	
	I 1		15.7043	22.9810	— 28	—1.4	—2.1	40 33 19.40	+ 3 3.74	+ 16	— 49	+ 5	22.86	—8	45.9
	2		13.3083	26.4033	— 12	—1.7	—1.3	40 41 54.23	— 5 30.75	— 12	— 44	—10	22.82	—8	45.4
May	3		16.2307	22.6707	— 21	+ .3	+ .3	40 33 40.45	+ 2 42.62	+ 15	+ 9	+ 5	23.36	—8	45.4
7	VII 7	D	12.8523	24.9393	— 79	— .4	— .1	40 41 28.19	— 5 5.09	— 11	— 8	— 8	22.83	+4	54.9
	8		19.9910	17.3357	— 23	+1.0	+1.2	40 37 29.48	— 1 7.01	+ 1	+ 31	— 2	22.77	+4	
	9		13.6450	25.9477	— 16	+1.0	— .6	40 31 12.02	+ 5 10.70	+ 26	+ 8	+12	23.18	+4	54.2
	10		20.7170	19.5907	0	+ .3	— .3	40 36 51.91	— 28.45	+ 4	+ 1	— 1	23.50	+4	
	VIII 1		16.7300	20.0703	— 33	— .6	—1.0	40 37 47.24	— 1 24.29	+ 1	— 22	— 2	22.72	+4	52.8
	2		2[illegible].7883	14.6403	+ 52	—1.3	—2.7	40 31 16.07	+ 5 6.97	+ 27	— 54	+11	22.88	+3	
	3		2[illegible].6870	12.6650	— 84	— .7	—1.6	40 41 37.01	— 5 13.54	— 11	— 31	— 9	22.96	+3	51.0
	4		24.6167	16.3467	+ 23	—1.1	—1.8	40 32 53.84	+ 3 28.95	+ 17	— 40	+ 6	22.62	+3	
	5		10.9957ii	30.6543iv	0	— .9	—1.7	40 28 5.65	+ 8 16.54	+1.16	— 36	+17	23.16	+3	
	6		22.4693	19.3447	+ 17	+1.3	+ .3	40 37 42.46	— 1 18.97	+ 3	+ 24	— 3	23.73	+3	
	7		28.7577iv	12.8847ii	— 21	—2.6	—1.7	40 29 41.15	+ 6 40.87	+1.09	— 63	+11	22.59	+2	51.4
	8		21.0170	21.7127	+ 6	+ .2	— .2	40 36 5.30	+ 17.59	+ 11	0	+ 1	23.01	+2	
	9		13.8473	27.5357	+ 57	+1.2	+ .3	40 30 36.61	+ 5 45.89	+ 27	+ 23	+11	23.11	+2	50.5
	10		32.8240iv	5.0833ii	— 47	+ .1	—1.8	40 48 5.40	—11 40.56	—1.12	— 21	—24	23.27	+2	50.1
	11		13.6893	29.1337	+128	— .6	—1.7	40 42 53.89	— 6 30.42	— 16	— 31	—11	22.89	+1	50.0
	XI 2	D	31.1057iv	6.8860ii	— 25	—2.5	—2.3	40 46 36.90	—10 11.72	—1.04	— 68	—23	23.23	—5	45.9
	3		32.0560iv	6.5897ii	— 22	—1.7	—1.8	40 25 39.36	+10 43.22	+1.22	— 50	+18	23.48	—7	
	4		31.7910iv	6.4773ii	— 27	—1.0	—2.0	40 25 44.21	+10 39 35	+1.22	— 41	+19	24.56	—7	
	5		36.4177iv	3.3087ii	— 11	—1.2	—1.6	40 22 25.76	+13 56.30	+1.34	— 39	+26	23.27	—7	
	6		13.8687	25.8550	— 10	+ .1	— .3	40 31 19.99	+ 5 2.75	+ 25	— 2	+10	23.07	—7	44.8
	7		21.8693	18.7373	+ 6	—1.3	—1.6	40 37 42.20	— 1 19.13	+ 2	— 40	— 2	22.67	—7	
	8		18.3010	19.3223	— 6	+ .2	+ .1	40 36 48.63	— 25.78	+ 5	+ 4	— 1	22.93	—8	44.6
	I 1		23.8763	16.6513	+ 11	+1.8	+ .9	40 33 19.57	+ 3 2.53	+ 16	+ 40	+ 5	22.71	—8	44.2
	2		24.6207	11.4913	—151	+ .6	+ .3	40 41 54.40	— 5 31.26	— 12	+ 14	—10	23.06	—8	
May	3		23.9500	17.5687	+ 29	+1.0	+1.6	40 33 40.60	+ 2 41.26	+ 15	+ 36	+ 5	22.42	—8	44.4
8	1	R	21.5007	18.1507	— 3	— .1	0	40 37 47.37	— 1 24.60	0	— 2	— 2	22.73	+4	57.2
	VIII 2		14.2627	26.3700	+ 24	+2.1	0	40 31 16.18	+ 5 5.87	+ 30	+ 34	+11	22.80	+3	
	3		13.9670	26.3923	+ 14	— .5	— .1	40 41 37.16	— 5 13.87	— 15	— 10	— 9	22.95	+3	56.6
	4		16.0263	24.2957	+ 9	+ .1	— .4	40 32 54.00	+ 3 28.90	+ 19	— 4	+ 6	23.11	+3	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
May 8	VIII 5	R	30.8213iv	11.1797ii	— 3	— .6	— .3	40 28 5.81	+ 8 16.10	+1.22	— 14	+17	40 36 23.16	+3	55.6
	6		18.2240	21.3900	— 4	— .3	— .6	40 37 42.44	— 1 19.95	+ 2	— 12	— 3	22.36	+3	
	7		12.7587ii	28.6027iv	— 17	+ .1	— .2	40 29 41.33	+ 6 40.14	+1.14	— 1	+11	22.71	+3	54.8
	8		22.9110	22.2217	+ 10	— .3	— .2	40 36 5.46	+ 17.44	+ 11	— 8	+ 1	22.94	+2	54.4
	9		28.5193	14.8567	+137	+ .1	+ .3	40 30 36.78	+ 5 45.44	+ 31	+ 6	+11	22.70	+2	
	10		5.4107ii	33.1877iv	— 32	— .2	0	40 48 5.58	—11 41.51	—1.20	— 3	—24	22.60	+2	53.6
	11		25.8373	10.3467	—176	— .4	—1.0	40 42 54.10	— 6 30.81	— 21	— 19	—11	22.78	+2	
	IX 1		29.1417	13.5093	+121	— .9	— .7	40 29 47.43	+ 6 35.15	+ 33	— 24	+12	22.79	+1	53.4a
	2		24.9870	17.2667	+ 51	+1.1	+ .8	40 39 38.22	— 3 15.13	— 7	+ 28	— 5	23.25	0	53.3
	3		17.3010	23.7163	+ 18	—1.3	—1.6	40 39 5.25	— 2 42.08	— 5	— 40	— 4	22.68	—0	
May 9	4		19.2617	22.4957	+ 17	—1.0	— .3	40 37 44.01	— 1 21.72	+ 2	— 20	— 3	22.08	—1	52.8
	VIII 2	D	25.3437	13.2237	— 52	+ .2	— .3	40 31 16.32	+ 5 6.00	+ 30	— 1	+11	22.72	+3	59.6
	3		26.0080	13.5900	— 15	+ .1	—1.4	40 41 37.32	— 5 13.62	— 15	— 16	— 9	23.30	+4	
	4		24.7397	16.4883	+ 29	— .3	— .7	40 32 54.17	+ 3 28 49	+ 19	— 14	+ 6	22.77	+3	58.4
	5		7.9040ii	27.5380iv	+ 6	— .2	—1.2	40 28 5.98	+ 8 15.92	+1.22	— 18	+16	23.10	+3	
	6		22.5053	19.3507	+ 17	— .2	+ .2	40 37 42.62	— 1 19.71	+ 2	0	— 3	22.90	+3	57.6
	7		28.1393iv	12.3067ii	— 5	—1.3	—1.2	40 29 41.52	+ 6 39.88	+1.14	— 36	+11	22.29	+3	
	8		20.5777	21.2550	+ 3	— .6	— .4	40 36 5.62	+ 17.12	+ 11	— 24	+ 1	22.62	+2	
	9		12.6203	26.3097	— 44	—1.4	— .9	40 30 36.97	+ 5 45.66	+ 31	— 34	+11	22.71	+2	
	10		30.7657iv	2.9860ii	—142	— .5	—1.7	40 48 5.77	—11 41.30	—1.20	— 30	—23	22.74	+2	55.9
	11		13.4177	28.8810	+104	— .3	—1.0	40 42 54.32	— 6 30.83	— 21	— 18	—11	22.99	+2	54.6
	IX 2		16.3567	24.0453	+ 8	—3.5	—4.0	40 39 38.46	— 3 14.22	— 7	—1.06	— 5	23.06	0	
	3		24.0303	17.6230	+ 30	— .5	—2.2	40 39 5.49	— 2 41.91	— 5	— 36	— 4	23.13	0	53.1
	4		20.6673	19.3883	0	—2.1	—2.8	40 35 50.98	+ 32.31	+ 8	— 69	+ 1	22.69	0	
	5		21.1853	17.9780	— 8	—2.4	—2.6	40 37 44.24	— 1 20.99	+ 2	— 71	— 3	22.53	—1	52.8
	6		17.6613	19.0063	— 14	—1.8	—2.6	40 36 57.39	— 33.94	+ 7	— 62	— 1	22.89	—1	
May 10	7		31.3250iv	7.3903ii	— 16	— .6	— .7	40 46 28.92	—10 4.50	—1.15	— 18	—18	22.91	—1	51.9
	VIII 1	R	22.9530	19.5987	+ 25	+ .7	+2.0	40 37 47.66	— 1 24.78	0	+ 36	— 3	23.21	+4	66.4
	2		14.9280	27.0510	+ 70	+ .3	+ .1	40 31 16.45	+ 5 6.36	+ 30	+ 6	+11	23.28	+3	65.9
	3		14.2453	26.6437	+ 33	—3.0	—3.1	40 41 37.49	— 5 13.22	— 15	— 86	— 9	23.17	+4	
	4		17.1353	25.4010	+ 60	— .6	—1.1	40 32 54.34	+ 3 28.92	+ 19	— 24	+ 6	23.27	+4	65.1
	5		30.3193iv	10.6867ii	0	—1.5	—1.1	40 28 6.15	+ 8 15.85	+1.22	— 38	+17	23.01	+3	64.8
	6		18.9907	22.1530	+ 11	— .7	—1.9	40 37 42.81	— 1 19.90	+ 2	— 35	— 3	22.55	+3	
	7		12.2647ii	28.0880iv	— 4	+ .5	+ .4	40 29 41.71	+ 6 39.63	+1.14	+ 13	+11	22.72	+3	
	8		20.9447	20.2647	0	+ .5	— .5	40 36 5.80	+ 17.18	+ 11	+ 2	+ 1	23.12	+2	64.1
	9		28.7693	15.0833	+155	—1.1	— .9	40 30 37.17	+ 5 46.06	+ 31	— 29	+11	23.36	+2	
	10		5.5113ii	33.2890iv	— 27	— .9	— .5	40 48 5.98	—11 41.50	—1.20	— 21	—23	22.84	+2	62.2
	11		26.5710	11.0720	—107	—1.4	—2.0	40 42 54.55	— 6 31.18	— 21	— 48	—11	23.57	+2	
	IX 1		29.6677	14.0477	+171	— .9	—1.4	40 29 47.87	+ 6 34.94	+ 33	— 32	+12	22.94	+1	61.4
	2		23.2290	15.5023	— 29	— .6	— .8	40 39 38.70	— 3 15.08	— 7	— 20	— 5	23.30	0	
	3		17.4573	23.8547	+ 24	—1.7	—1.6	40 39 5.75	— 2 41.64	— 5	— 47	— 4	23.55	0	59.4
	4		18.9380	20.2020	— 3	— .9	—1.0	40 35 51.24	+ 31.92	+ 8	— 27	+ 1	22.98	0	
	5		17.4963	20.7197	— 18	— .8	—3.0	40 37 44.48	— 1 21.37	+ 2	— 50	— 3	22.60	—1	59.9
	6		20.6040	19.2453	0	— .7	—1.4	40 36 57 63	— 34.32	+ 7	— 28	— 1	23.09	—1	
	7		7.8903ii	31.8253iv	— 4	—2.7	—2.5	40 46 29.19	—10 4.51	—1.15	— 74	—18	22.61	—1	59.0
May 11	XI 2	R	9.9293ii	34.1410iv	+ 52	—1.3	—2.3	40 46 37.68	—10 11.66	—1.11	— 50	—23	24.18	—5	58.4
	3		6.6143ii	32.0237iv	— 23	—1.4	—1.6	40 25 40.25	+10 41.72	+1.30	— 42	+18	23.03	—6	
	4		7.8627ii	33.0940iv	+ 15	— .6	—1.3	40 25 45.07	+10 37.31	+1.29	— 26	+19	23.60	—6	
	5		1.2650ii	34.3587iv	—168	—2.2	—2.0	40 22 26.58	+13 55.44	+1.44	— 60	+26	23.12	—6	57.3
	6		27.0500	15.0750	+ 75	— .8	—1.2	40 31 20.78	+ 5 2.64	+ 27	— 28	+10	23.51	—6	
	7		19.7153	22.8753	+ 24	+ .2	— .3	40 37 43.00	— 1 19.87	+ 1	— 1	— 2	23.11	—7	56.1
	8		21.5007	20.4580	+ 8	—1.6	—2.9	40 36 49.39	— 26.36	+ 4	— 62	— 1	22.44	—7	
	I 1		16.5720	23.8003	+ 8	— .4	—1.2	40 33 20.31	+ 3 2.58	+ 18	— 22	+ 5	22.90	—7	
	2		13.8487	26.9537	+ 31	—4.0	—1.9	40 41 55.10	— 5 31.08	— 16	— 88	—10	22.88	—8	55.4
	3		16.7720	23.2180	0	—2.4	—3.0	40 33 41.26	+ 2 42.81	+ 17	— 76	+ 5	23.53	—8	55.0

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
May 11	I 4	D	22.8077	18.0610	+ 13	—2.0	—1.9	40 34 23.80	+ 1 59 92	+ 14	— 56	+ 3	40 36 23.33	—8	55.2
May 12	VIII 1		17.6217	20.9970	— 15	+ .6	+1.4	40 37 47.92	— 1 25.21	+ 1	+ 27	— 3	22.96	+4	69.3
	2		23.9827	11.8660	—149	— .2	— .1	40 31 16.72	+ 5 5.64	+ 30	— 4	+11	22.73	+4	68.4
	3		25.4617	12.9897	— 57	— .2	— .7	40 41 37.83	— 5 14.84	— 15	— 12	— 9	22.63	+4	
	4		25.0063	16.7697	+ 42	— .8	—1.0	40 32 54.67	+ 3 28.13	+ 19	— 25	+ 6	22.80	+4	67.9
	5		10.6020^{ii}	30.2143^{iv}	0	— .2	— .8	40 28 6.49	+ 8 15.32	+1.22	— 13	+17	23.07	+3	
	6		20.5830	17.4090	— 19	—1.2	+ .4	40 37 43.18	— 1 20.12	+ 2	— 14	— 3	22.91	+3	66.3
	7		27.7487^{iv}	11.9270^{ii}	+ 4	—2.3	—2.2	40 29 42.12	+ 6 39.60	+1.14	— 64	+11	22.33	+3	
	8		21.4780	22.1573	+ 8	—1.6	—2.0	40 36 6.16	+ 17.18	+ 11	— 50	+ 1	22.96	+3	65.4
	9		12.2057	25.8947	— 78	—2.0	—3.0	40 30 37.57	+ 5 45.54	+ 31	— 70	+11	22.83	+2	
	10		32.0523^{iv}	4.2320^{ii}	— 83	+ .5	+ .1	40 48 6.40	—11 42.41	—1.20	+ 10	—23	22.66	+2	
	11		12.8330	28.3297	+ 52	—1.2	—2.6	40 42 55.03	— 6 31.51	— 21	— 52	—11	22.68	+2	63.9
	IX 1		12.0830	27.6887	— 12	— .5	—1.0	40 29 48.33	+ 6 34.10	+ 33	— 20	+12	22.68	+2	63.6
	2		15.0503	22.8333	— 48	+1.7	+2.4	40 39 39.23	— 3 16.44	— 7	+ 57	— 5	23.24	+1	63.5
	3		22.6843	16.2353	— 20	+ .7	+ .1	40 39 6.29	— 2 42.83	— 5	+ 12	— 4	23.49	+1	
May 19	4		20.2263	18.9613	— 2	— .7	—1.8	40 35 51.80	+ 31.95	+ 8	— 34	+ 1	23.50	+1	62.4
	VIII 2	R	13.8807	25.9780	— 6	— .4	— .6	40 31 17.21	+ 5 5.54	+ 30	— 14	+ 3	22.94	+4	58.1
	3		13.8330	26.2790	+ 5	—2.4	—3.2	40 41 38.52	— 5 14.37	— 15	— 78	— 9	23.13	+5	
	5		30.4550^{iv}	10.8530^{ii}	0	0	— .4	40 28 7.26	+ 8 15.10	+1.22	— 5	+17	23.70	+4	56.8
	6		20.3737	23.5530	+ 37	—2.4	—3.3	40 37 44.06	— 1 20.39	+ 2	— 80	— 3	22.86	+4	
	7		11.7143^{ii}	27.4960^{iv}	+ 11	— .3	— .6	40 29 43.11	+ 6 38.64	+1.13	— 12	+11	22.87	+4	
	8		21.9757	21.3457	+ 7	+ .3	— .1	40 36 7.01	+ 15.93	+ 11	+ 4	+ 1	23.10	+3	56.2
	9		28.9080	15.3157	+168	—1.8	—1.9	40 30 38.58	+ 5 43.73	+ 31	— 52	+11	22.21	+3	
	10		4.4593^{ii}	32.3080^{iv}	— 75	+ .4	+ .1	40 48 7.50	—11 43.21	—1.20	+ 8	—23	22.94	+3	56.4
	11		28.8623	13.2940	+ 99	+3.3	+2.1	40 42 56.32	— 6 33.47	— 21	+ 79	—11	23.32	+3	56.5
	IX 1		28.6197	13.0857	+ 79	—2.0	+ .8	40 29 49.61	+ 6 32.55	+ 33	— 22	+12	22.39	+2	
	2		23.5453	15.7063	— 18	+1.2	+ .5	40 39 40.76	— 3 17.95	— 7	+ 26	— 5	22.95	+2	
	3		17.1387	23.6547	+ 15	—1.0	— .6	40 39 7.90	— 2 44.62	— 5	— 24	— 4	22.95	+2	
	4		20.1530	21.2877	+ 4	+1.7	+1.7	40 35 53.48	+ 28.67	+ 8	+ 48	+ 1	22.72	+1	54 8
	5		20.6760	24.0070	+ 45	— .2	+ .6	40 37 46.59	— 1 24.24	+ 2	+ 4	— 3	22.38	+1	54.5
	6		22.6467	21.2150	+ 17	—2.0	—2.2	40 36 59.70	— 36.21	+ 7	— 60	— 1	22.95	0	
	7		8.9667^{ii}	32.9853^{iv}	+ 24	+ .3	—1.0	40 46 31.56	—10 6.72	—1.15	— 8	—18	23.43	0	53.2
	XI 2	D	30.0650^{iv}	5.7357^{ii}	— 54	— .8	—1.7	40 46 39.68	—10 14.39	—1.11	— 34	—24	23.60	—4	49.8
	4		31.8067^{iv}	6.6333^{ii}	— 24	—4.1	—5.6	40 25 47.28	+10 35.79	+1.29	—1.36	+19	23.19	—5	
	5		33.8057^{iv}	0.8200^{ii}	—208	— .7	—1.0	40 22 28 72	+13 52.66	+1.44	— 24	+25	22.83	—5	
	6		13.1870	25.0813	— 61	—1.2	—2.4	40 31 22.87	+ 5 0.28	+ 27	— 49	+10	23.03	—5	49.8
	7		22.1467	18.9150	+ 10	+ .2	— .5	40 37 45.13	— 1 21.66	+ 1	— 4	— 2	23.42	—6	
	8		20.2217	21.3753	+ 5	— .3	— .4	40 36 51.49	— 29.15	+ 4	— 10	— 1	22.27	—6	
	I 1		23.1273	16.0283	— 18	+ .7	+ .5	40 33 22.38	+ 2 59.27	+ 18	+ 18	+ 5	22.06	—7	
	2		26.8983	13.6387	+ 21	+2.7	+1.1	40 41 57.09	— 5 34.98	— 16	+ 57	—10	22.42	—7	47.6
	4		17.8350	22.5010	+ 4	—1.0	—1.7	40 34 25.69	+ 1 57.87	+ 14	— 38	+ 3	23.35	—7	47.2
	5		17.7057	23.6163	+ 22	+ .8	— .7	40 33 54.12	+ 2 29.36	+ 16	+ 4	+ 4	23.72	—7	
May 31	6		19.1873	20.8890	+ 1	—2.2	—2.2	40 35 41.10	+ 42.99	+ 12	— 62	+ 1	23.60	—7	47.8*a*
	VIII 6	D	21.9127	18.6653	+ 6	— .5	—1.1	40 37 45.57	— 1 22.03	+ 2	— 22	— 3	23.31	+5	67.0
	7		28.8120^{iv}	13.0580^{ii}	— 24	—2.4	—3.9	40 29 44.78	+ 6 37.82	+1.13	— 87	+11	22.97	+5	65.6
	9		12.7703	26.3447	— 36	—1.7	—3.3	40 30 40.30	+ 5 42.74	+ 31	— 68	+11	22.78	+5	64.7
	10		32.3707^{iv}	4.4617^{ii}	— 73	+ .6	— .2	40 48 9.36	—11 44.69	—1.20	+ 7	—23	23.31	+4	64.4
	11		12.8487	28.4797	+ 62	—1.3	—1.6	40 42 58.54	— 6 34.94	— 21	— 40	—11	22.88	+5	
	IX 1		11.9247	27.3793	— 32	+ .2	+ .2	40 29 51.77	+ 6 30.25	+ 33	+ 6	+12	22.53	+4	63.9
	2		17.3427	25.2393	+ 59	—1.5	—1.5	40 39 43.37	— 3 19.58	— 7	— 43	— 5	23.24	+3	63.4
	3		23.3790	16.7537	+ 3	+ .5	+ .3	40 39 10.60	— 2 47.34	— 5	+ 12	— 4	23.29	+3	63.0
	4		21.9333	20.8810	+ 8	—1.0	— .5	40 35 56.34	+ 26.60	+ 8	— 22	+ 1	22.81	+3	
	5		21.9207	18.4820	+ 4	0	— .3	40 37 50.03	— 1 26.86	+ 1	— 4	— 3	23.11	+2	62.2
	6		19.6980	21.2607	+ 4	— .8	—1.9	40 37 2.38	— 39.48	+ 6	— 36	— 1	22.59	+2	
	7		32.8760^{iv}	8.7363^{ii}	+ 20	+ .3	+1.0	40 46 34.60	—10 9.73	—1.16	+ 18	—18	23.71	+2	61.2

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
June 7	VIII 8	R	21.7437	21.1797	+ 5	— .9	—2.3	° ′ ″ 40 36 9.08	+ 14.26	+ 11	— 44	+ 1	° ′ ″ 40 36 23.02	+5	67.4
	9		28.3870	14.8573	+130	— .5	—1.2	40 30 41.04	+ 5 42.03	+ 31	— 23	+11	23.26	+5	65.6
	10		3.2980ii	31.2300iv	—129	— .4	— .6	40 48 10.17	—11 45.13	—1.20	— 14	—23	23.47	+5	65.3
	11		28.2743	12.6007	+ 40	— .3	— .6	40 42 59.54	— 6 35.95	— 21	— 12	—11	23.15	+5	
	IX 1		29.0810	13.6600	+124	—2.6	—2.9	40 29 52.75	+ 6 29.78	+ 33	— 78	+12	22.20	+5	65.1
	2		23.8683	15.8707	— 7	+1.8	+ .8	40 39 44.61	— 3 21.97	— 7	+ 38	— 5	22.90	+4	
	3		16.1897	22.8610	— 18	—1.1	—1.3	40 39 11.91	— 2 48.45	— 5	— 34	— 4	23.03	+4	63.9
	4		20.0790	21 0760	+ 4	— .6	—1.1	40 35 57.72	+ 25.19	+ 8	— 24	+ 1	22.76	+4	63.3
	5		19.3697	22.8347	+ 22	— .3	— .5	40 37 50.60	— 1 27.57	+ 1	— 12	— 3	22.89	+3	
	6		21.8313	20.2277	+ 9	— .3	—2.0	40 37 3.64	— 40.52	+ 6	— 30	— 1	22.87	+3	
	7		8.2877ii	32.4893iv	+ 10	—1.8	—1.2	40 46 36.11	—10 11.26	—1.16	— 44	—18	23.07	+3	63.0
	XI 6	R	27.2097	15.5263	+ 94	—1.1	—1.5	40 31 27.87	+ 4 55.33	+ 27	— 36	+10	23.21	—3	58.8
	7		18.7077	22.1347	+ 8	—2.9	—2.8	40 37 50.34	— 1 26.58	0	— 82	— 2	22.92	—3	58.8
	8		20.3923	19.0943	0	—1.5	—3.2	40 36 56.64	— 32.79	+ 4	— 64	— 1	23.24	—4	58.4
	I 2		13.8943	27.2770	+ 47	—2.4	—1.6	40 42 2.06	— 5 38.13	— 17	— 58	—10	23.08	—4	58.2
	3		17.5137	23.6683	+ 20	— .5	—1.1	40 33 48.06	+ 2 35.50	+ 16	— 22	+ 4	23.54	—5	
	4		23.1403	18.6497	+ 23	—3.1	—3.3	40 34 30.47	+ 1 53.48	+ 14	— 91	+ 3	23.21	—5	
	5		22.0753	16.3227	— 28	—2.5	—1.7	40 33 58.79	+ 2 25.23	+ 15	— 61	+ 4	23.60	—5	
	6		21.3693	19.8510	+ 5	—3.5	—2.3	40 35 45.25	+ 38.36	+ 12	— 84	+ 1	22.90	—5	57.4
	7		11.5643	31.2347	+162	—2.7	—2.8	40 28 5.97	+ 8 17.23	+ 40	— 78	+16	22.98	—6	
	8		8.7453ii	33.4143iv	+ 30	— .4	—1.0	40 25 59.16	+10 23.15	+1.29	— 19	+18	23.59	—6	56.6
	9		15.4950	28.3347	+146	— .5	— .2	40 30 58.40	+ 5 24.67	+ 28	— 10	+ 9	23.34	—6	
June 8	10		26.4940	15.9777	+ 78	+1.0	+ .7	40 40 49.69	— 4 25.81	— 5	+ 25	—11	23.97	—5	56.4
	IX 1	D	11.9743	27.3940	— 27	+ .7	+ .6	40 29 52.92	+ 6 29.37	+ 33	+ 18	+12	22.92	+5	68.5
	2		16.0317	24.0150	0	— .4	— .5	40 39 44.81	— 3 21.63	— 7	— 13	— 5	22.93	+4	67.5
	3		23.1670	16.4580	— 7	+1.6	+1.9	40 39 12.12	— 2 49.42	— 5	+ 50	— 4	23.11	+4	67.4
	4		19.8590	18.8870	— 4	— .1	— .6	40 35 57.96	+ 24.54	+ 8	— 9	+ 1	22.50	+4	67.3
	5		21.3703	17.8563	+ 7	+2.3	+1.6	40 37 50.83	— 1 28.73	+ 1	+ 56	— 3	22.64	+3	
	6		18.8667	20.5013	— 2	— .5	— .7	40 37 3.86	— 41.27	+ 6	— 17	— 1	22.47	+3	67.2
	7		32.3417iv	8.1087ii	+ 6	+ .8	+ .6	40 46 36.37	—10 12.04	—1.16	+ 20	—18	23.19	+3	
	X 1		14.0763	27.0550	+ 43	—1.0	—2.0	40 41 51.00	— 5 27.90	— 16	— 41	—10	22.43	+3	66.4
	2		8.7703ii	28.4853iv	+ 3	— .2	— .5	40 28 4.19	+ 8 17.92	+1.22	— 10	+16	23.39	+2	65.6
	3		18.8923	21.1660	0	+ .2	+ .4	40 35 25.47	+ 57.42	+ 10	+ 8	+ 2	23.09	+2	65.6
	4		12.6433	27.4837	+ 6	— .1	+ .1	40 30 7.26	+ 6 14.82	+ 32	0	+10	22.50	+2	
	5		30.2187iv	8.8697ii	— 3	+ .2	— .6	40 45 23.77	— 8 59.18	—1.06	— 4	—21	23.28	+1	65.4
	6		22.3867	18.4177	+ 10	0	+ .2	40 34 42.26	+ 1 40.26	+ 14	+ 2	+ 3	22.71	+1	65.1
	7		14.9813	25.7473	+ 23	+1.0	+ .3	40 31 51.10	+ 4 31.96	+ 24	+ 20	+ 8	23.58	+1	64.0
	8		29.7143	9.4127	— 54	—1.6	—2.1	40 44 56.55	— 8 32.60	— 28	— 52	—15	23.00	0	62.6
	9		28.1360	10.0680	— 96	— .2	—1.4	40 44 0.12	— 7 36.08	— 23	— 20	—14	23.47	0	
	10		6.9803ii	31.6510iv	— 18	—1.3	—2.3	40 46 47.83	—10 23.03	—1.17	— 50	—18	22.95	—1	61.9
	XI 6	D	12.1607	23.8410	—138	— .3	— .5	40 31 28.17	+ 4 54.66	+ 27	— 12	+10	23.08	—3	61.1
	7		20.2720	16.8103	— 30	— .1	—1.1	40 37 50.65	— 1 27.36	0	— 16	— 3	23.10	—3	60.4
	I 1		22.5227	15.5837	— 39	—1.4	—3.2	40 33 27.82	+ 2 55.16	+ 18	— 63	+ 5	22.58	—4	60.9
	3		22.9583	16.8180	— 4	— .6	—1.4	40 33 48.35	+ 2 35.07	+ 16	— 27	+ 4	23.35	—5	60.1
	4		16.8807	21.3900	— 23	—2.1	—4.2	40 34 30.76	+ 1 53.84	+ 14	— 86	+ 3	23.91	—5	59.4
	5		17.3583	23.0697	+ 8	— .8	— .3	40 33 59.07	+ 2 24.27	+ 16	— 16	+ 4	23.38	—5	59.3
	6		18.3590	19.8440	— 7	— .7	—1.1	40 35 45.51	+ 37.49	+ 11	— 25	+ 1	22.87	—5	
	7		28.6483	8.9970	—136	— .2	—1.7	40 28 6.23	+ 8 15.98	+ 40	— 24	+15	22.52	—5	
	8		32.4160iv	7.7770ii	+ 3	— .8	— .1	40 25 59.42	+10 22.31	+1.28	— 14	+18	23.05	—6	59.4
	9		26.1363	13.2997	— 21	— .2	— .3	40 30 58.66	+ 5 24.16	+ 28	— 7	+ 9	23.12	—6	59.0
June 9	10		13.3707	23.9040	— 84	—1.2	—3.2	40 40 49.89	— 4 25.83	— 5	— 60	—11	23.30	—5	38.6
	IX 1	R	28.1683	12.7740	+ 42	+1.1	+1.1	40 29 53.09	+ 6 28.89	+ 38	+ 32	+12	22.80	+5	71.9
	2		24.2237	16.2130	+ 10	+1.5	+1.5	40 39 45.02	— 3 22.33	— 10	+ 43	— 6	22.96	+5	71.3
	3		16.5687	23.2800	— 3	+ .4	0	40 39 12.34	— 2 49.49	— 7	+ 6	— 5	22.79	+4	71.0
	4		19.3980	20.3527	+ 1	+ .7	+ .7	40 35 58.19	+ 24.12	+ 8	+ 20	0	22.59	+4	69.5

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
June								° ′ ″					° ′ ″		
9	IX 5	R	19.0763	22.5790	+ 18	— .5	— .6	40 37 51.05	— 1 28.50	0	— 16	— 3	40 36 22.36	+4	68.4
	6		20.0703	18.4383	— 8	— .5	—1.0	40 37 4.09	— 41.19	+ 6	— 20	— 1	22.75	+3	
	7		8.1177ii	32.3580iv	+ 7	—1.0	— .5	40 46 36.63	—10 12.21	—1.24	— 22	—18	22.78	+3	67.4
	X 1		26.7783	13.7693	+ 20	+1.3	+1.4	40 41 51.28	— 5 28.59	— 20	+ 38	— 9	22.78	+3	67.2
	2		32.0857iv	12.3773ii	— 5	— .1	+ .8	40 28 4.44	+ 8 17.73	+1.29	+ 8	+17	23.71	+2	
	3		21.2720	19.0003	+ 2	+1.0	+ .5	40 35 25.74	+ 57.38	+ 11	+ 22	+ 2	23.47	+2	67.6
	4		27.4523iv	12.6433ii	— 1	— .3	— .9	40 30 7.54	+ 6 14.00	+1.18	— 16	+10	22.66	+2	67.1
	5		10.0050ii	31.3597iv	+ 5	—1.1	0	40 45 24.01	— 8 59.34	—1.13	— 18	—21	23.15	+2	66.6
	6		19.3683	23.3450	+ 32	+1.0	+1.3	40 34 42.54	+ 1 40.51	+ 15	+ 32	+ 3	23.55	+1	66.4
	7		25.8140	15.0767	+ 27	—1.0	—1.0	40 31 50.56	+ 4 31.24	+ 28	+ 28	+ 8	22.44	+1	66.5
	8		9.9963	30.2960	+ 19	— .8	—1.5	40 44 56.86	— 8 32.72	— 35	— 32	—14	23.33	0	66.1
	9		11.0227	29.0617	+ 4	—2.8	—2.3	40 44 0.44	— 7 35.59	— 29	— 74	—14	23.68	0	
	10		32.4137iv	7.7130ii	+ 1	—2.0	—4.0	40 46 48.16	—10 23.82	—1.25	— 82	—18	22.09	—1	65.1
	XI 6	R	26.7087	15.0627	+ 61	— .8	— .7	40 31 28.48	+ 4 54.29	+ 31	— 22	+10	22.96	—3	63.4
	7		18.6153	22.0900	+ 7	+ .9	+ .8	40 37 50.97	— 1 27.78	— 1	+ 24	— 3	23.39	—3	62.9
	8		20.8107	19.4663	0	+ .2	— .5	40 36 57.27	— 33.96	+ 3	— 4	— 1	23.29	—4	62.6
	I 1		15.9007	22.8393	— 26	+ .3	— .6	40 33 28.15	+ 2 55.18	+ 20	— 2	+ 5	23.56	—4	
	2		12.5277	25.9607	— 61	—2.2	—1.9	40 42 2.67	— 5 39.12	— 21	— 59	—10	22.65	—4	62.6
	3		17.5747	23.7047	+ 23	—1.2	—2.9	40 33 48.66	+ 2 34.88	+ 18	— 56	+ 4	23.20	—5	
	4		21.6847	17.2277	— 15	—2.1	—1.7	40 34 31.07	+ 1 52.53	+ 15	— 55	+ 3	23.23	—5	62.5
	5		22.8370	17.1357	— 2	—1.9	—1.4	40 33 59.38	+ 2 23.99	+ 18	— 48	+ 4	23.11	—5	61.9
	6		20.5423	19.0390	0	—2.6	—1.4	40 35 45.78	+ 37.96	+ 12	— 59	+ 1	23.28	—5	
	7		10.3987	30.0340	+ 24	—1.7	—2.3	40 28 6.52	+ 8 15.98	+ 47	— 56	+15	22.56	—5	60.9
	8		6.8403ii	31.4633iv	— 23	+ .2	— .7	40 25 59.70	+10 21.83	+1.37	— 6	+18	23.02	—6	
	9		13.8923	26.7270	+ 22	— .3	—1.7	40 30 58.94	+ 5 24.22	+ 32	— 26	+ 9	23.31	—6	60.8
June	10		27.3310	16.8160	+128	—1.6	—2.6	40 40 50.12	— 4 25.90	— 9	— 58	—11	23.44	—5	60.5
11	IX 1	D	12.6123	27.9910	+ 26	+ .6	+ .3	40 29 53.37	+ 6 28.45	+ 38	+ 14	+12	22.46	+5	76.5
	2		15 5727	23.5323	— 21	—4.0	—3.9	40 39 45.39	— 3 20.96	— 10	—1.12	— 6	23.15	+5	75.4
	3		20.8217	14.0940	—100	— .1	— .3	40 39 12.75	— 2 49.66	— 7	— 6	— 5	22.91	+5	74.9
	4		19.9867	19.0420	— 3	0	— .5	40 35 58.63	+ 23 86	+ 8	— 6	0	22.51	+4	74.2
	5		20.3433	16.8393	— 29	+ .1	— .5	40 37 51.47	— 1 28.42	0	— 5	— 3	22.97	+4	
	6		18.1320	19.7853	— 10	—1.0	—1.4	40 37 4.51	— 41.73	+ 6	— 34	— 1	22.49	+3	73.3
	7		31.9410iv	7.6810ii	— 6	— .2	— .3	40 46 37.11	—10 12.66	—1.24	— 7	—18	22.96	+4	
	X 1		13.4880	26.4967	+ 1	—2.2	—2.8	40 41 51.79	— 5 28.53	— 20	— 70	— 9	22.27	+3	72.3
	2		9.2520ii	28.9413iv	0	— .2	— .1	40 28 4.93	+ 8 17.25	+1.29	— 4	+17	23.60	+3	
	3		18.0853	20.3410	— 10	— .8	— .8	40 35 26.28	+ 56.94	+ 11	— 22	+ 2	23.13	+3	
	4		12.5707ii	27.3590iv	0	+ .1	— .3	40 30 8.11	+ 6 13.47	+1.18	— 2	+10	22.84	+2	
	5		29.1963iv	7.8100ii	— 12	— .4	—1.7	40 45 24.51	— 9 0.07	—1.13	— 28	—21	22.82	+2	70.4
	6		21.5700	17.6160	— 10	+ .2	— .5	40 34 43.11	+ 1 39.83	+ 15	— 4	+ 3	23.08	+1	70.0
	XI 6	D	13.0660	24.6877	— 76	+ .9	+ .7	40 31 29.14	+ 4 53.32	+ 31	+ 22	+10	23.09	—2	68.9
June	7		21.0693	17.5733	— 14	—1.3	—2.3	40 37 51.66	— 1 28.24	— 1	— 50	— 3	22.88	—3	66.6
13	IX 1	R	28.3190	12.9160	+ 55	—1.6	—1.7	40 29 53.58	+ 6 29.15	+ 38	— 47	+12	22.76	+5	69.5
	2		23.4197	15.3933	— 28	+ .2	+ .5	40 39 45.70	— 3 22.64	— 10	+ 10	— 6	23.00	+5	68.9
	3		15.8130	22.5320	— 33	—1.5	—1.3	40 39 13.08	— 2 49.61	— 7	— 40	— 5	22.95	+5	68.6
	4		19.5833	20.5243	0	+ .4	+ .3	40 35 59.00	+ 23.77	+ 2	+ 10	+ 6	22.95	+5	68.4
	5		18.7443	22.2450	+ 10	—1.7	—1.2	40 37 51.82	— 1 28.44	0	— 42	— 3	22.93	+4	67.6
	6		21.9213	20.2893	+ 10	—1.0	—1.7	40 37 4.87	— 41.24	+ 6	— 38	— 1	23.30	+4	67.4
	7		8.6700ii	32.9203iv	+ 20	—3.0	—1.9	40 46 37.54	—10 12.51	—1.24	— 72	—18	22.89	+4	66.9
	X 1		27.5730	14.5330	+ 82	— .6	—1.2	40 41 52.25	— 5 29.54	— 20	— 24	— 9	22.18	+3	66.6
	2		30.5930iv	10.9057ii	0	—1.2	—1.7	40 28 5.35	+ 8 17.22	+1.29	— 40	+17	23.63	+3	
	3		21.5747	19.3277	+ 6	—1.3	—1.1	40 35 26.77	+ 56.75	+ 10	— 34	+ 2	23.30	+3	
	4		27.1210iv	12.3423ii	+ 10	—1.7	— .3	40 30 8.62	+ 6 13.27	+1.18	— 31	+10	22.86	+3	67.0
	5		9.6930ii	31.0853iv	+ 2	—2.6	—2.4	40 45 24.94	— 9 0.28	—1.13	— 72	—21	22.60	+2	66.4
	6		19.8640	22.7950	+ 20	0	— .5	40 34 43.62	+ 1 39.33	+ 15	— 6	+ 3	23.07	+2	
	7		26.3350	15.6623	+ 63	+ .6	+ .2	40 31 52.60	+ 4 29.71	+ 28	+ 12	+ 8	22.79	+1	66.4

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
June								° ′ ″					° ′ ″		
13	X 8	R	10.7137	31.0580	+105	—1.1	— .9	40 44 58.04	— 8 34.08	— 35	— 29	—14	40 36 23.18	+1	65.9
	9		12.3917	30.5170	+156	+ .5	+ .5	40 44 1.64	— 7 38.16	— 30	+ 14	—14	23.18	+1	65.4
June	10		31.5910iv	6.8497ii	— 22	— .6	—3.1	40 46 49.44	—10 24.80	—1.25	— 48	— 8	22.83	0	64.9
14	I 1	D	24.1450	17.3030	+ 28	0	— .5	40 33 29.83	+ 2 52.87	+ 20	— 6	+ 5	22.89	—3	67.6
	2		25.4590	11.9317	—102	+ .4	+ .2	40 42 4.34	— 5 41.39	— 21	+ 9	—10	22.73	—3	66.9
	3		23.5160	17.4730	+ 17	+ .1	+ .2	40 33 50.33	+ 2 32.67	+ 18	+ 4	+ 4	23.26	—4	
	4		17.1627	21.5283	— 17	— .1	—1.7	40 34 32.72	+ 1 50.21	+ 15	— 23	+ 3	22.88	—4	66.6
	5		17.3800	23.0133	+ 6	+ .1	+ .2	40 34 1.02	+ 2 22.29	+ 18	+ 4	+ 4	23.57	—5	66.9
	6		18.5970	20.0103	— 6	+ .3	0	40 35 47.27	+ 35.67	+ 12	+ 5	+ 1	23.12	—4	
	7		29.6727	10.1053	— 14	— .5	— .2	40 28 8.05	+ 8 14.15	+ 46	— 10	+15	22.71	—5	
	8		31.9570iv	7.4080ii	— 9	— .3	+ .4	40 26 1.28	+10 19.98	+1.36	0	+18	22.80	—5	66.6
	9		27.2553	14.5013	+ 68	0	+1.3	40 31 0.49	+ 5 22.28	+ 32	+ 16	+ 9	23.34	—6	
June	10		13.6583	24.2913	— 64	+1.1	+1.0	40 40 51.43	— 4 28.38	— 9	+ 30	—11	23.15	—5	66.3
17	I 1	R	15.6817	22.5110	— 36	—1.0	—1.2	40 33 30.71	+ 2 52.40	+ 20	— 31	+ 5	23.05	—3	60.9
	2		13.4490	26.9570	+ 16	—1.3	—2.5	40 42 5.21	— 5 41.21	— 21	— 52	—10	23.17	—3	61.1
	3		16.7950	22.8210	— 7	— .4	— .3	40 33 51.20	+ 2 32.18	+ 18	— 10	+ 4	23.50	—3	60.9
	4		22.2400	17.8987	+ 1	— .3	+ .1	40 34 33.60	+ 1 49.65	+ 15	— 4	+ 3	23.39	—4	
	5		23.0067	17.4190	+ 6	— .7	—1.6	40 34 1.89	+ 2 21.14	+ 17	— 31	+ 4	22.93	—4	60.8
	6		22.8443	21.4613	+ 17	—1.7	— .8	40 35 48.06	+ 34.98	+ 12	— 37	+ 1	22.80	—4	
	7		11.7253	31.2367	+171	+2.2	+1.4	40 28 8.87	+ 8 13.22	+ 46	+ 52	+15	23.22	—4	
	8		8.7780ii	33.3047iv	+ 29	+ .5	— .8	40 26 2.14	+10 19.54	+1.36	— 2	+18	23.20	—5	
	9		13.4150	26.1447	— 16	+1.2	+ .4	40 31 1.35	+ 5 21.47	+ 32	+ 24	+ 9	23.47	—5	60.6
	10		26.8893	16.2657	+100	+ .8	+1.5	40 40 52.13	— 4 28.57	— 9	+ 32	—11	23.68	—5	
	II 1		21.8517	22.1893	+ 5	— .6	0	40 36 31.44	— 8.54	+ 12	— 10	0	22.92	—5	
	2		22.2000	22.4437	+ 3	+2.0	+2.8	40 36 16.49	+ 6.16	+ 10	+ 68	0	23.43	—5	60.6
	3		29.7107	11.8367	+ 82	—1.0	— .2	40 28 50.87	+ 7 31.65	+ 43	— 18	+13	22.90	—6	61.1
June	4		20.6523	24.4223	+ 56	+1.3	+1.9	40 37 57.42	— 1 35.36	+ 2	+ 44	— 3	22.49	—6	60.9
20	IX 3	D	23.5623iv	16.7420ii	—393	+ .6	+1.1	40 39 14.04	— 2 51.24	— 8	+ 24	— 5	22.91	+6	83.8
	5		20.2863	16.6983	— 32	— .3	+ .2	40 37 53.58	— 1 30.52	0	— 2	— 3	23.01	+5	84.4
	6		18.6320	20.3310	— 5	—1.0	—1.9	40 37 5.93	— 42.89	+ 6	— 40	— 1	22.69	+4	
	7		32.7687iv	8.4620ii	+ 16	0	+ .6	40 46 38.77	—10 13.85	—1.24	+ 8	—18	23.58	+5	83.9
	X 1		13.6043	26.7057	+ 12	+ .5	+1.0	40 41 53.64	— 5 30.88	— 20	+ 20	— 9	22.67	+4	
	2		9.3763ii	28.9913iv	0	— .2	— .4	40 28 6.59	+ 8 15.33	+1.29	— 8	+17	23.30	+4	83.4
	3		19.0643	21.2557	+ 2	— .3	— .1	40 35 28.17	+ 55.34	+ 10	— 6	+ 2	23.57	+4	
	4		12.9447	27.6500	+ 27	+ .1	0	40 30 10.12	+ 6 11.42	+ 37	+ 2	+10	22.03	+4	83.5
	5		30.3617iv	8.9107ii	— 3	+1.5	+ .9	40 45 26.17	— 9 1.69	—1.13	+ 36	—21	23.50	+3	83.2
	6		22.0080	18.1397	+ 1	— .1	+ .3	40 34 45.11	+ 1 37.68	+ 15	+ 2	+ 3	22.99	+3	82.7
	7		14.3770	25.0233	— 18	+ .2	—1.3	40 31 54.27	+ 4 28.81	+ 28	— 14	+ 8	23.30	+2	
	8		30.3980	9.9543	+ 22	+ .9	+1.1	40 44 59.71	— 8 36.27	— 35	+ 28	—14	23.23	+2	
	9		29.4010	11.1743	+ 31	+1.0	+1.8	40 44 3.34	— 7 40.35	— 30	+ 38	—14	22.93	+2	82.0
June	10		6.9473ii	31.7627iv	— 18	— .3	— .3	40 46 51.26	—10 26.61	—1.25	— 9	—18	23.13	+1	80.8
23	IX 3	R	16.2863	23.0393	— 13	—3.1	—2.8	40 39 14.58	— 2 50.52	— 8	— 85	— 4	23.09	+6	69.3
	4		18.9463	19.8590	— 4	—2.5	—3.6	40 36 0.65	+ 23.04	+ 8	— 85	0	22.92	+6	68.3
	5		19.3293	22.8783	+ 23	—1.8	—3.8	40 37 53.41	— 1 29.69	0	— 76	— 3	22.93	+5	
	6		22.4823	20.7810	+ 16	—1.9	—3.7	40 37 6.50	— 43.00	+ 6	— 76	— 1	22.79	+5	
	7		8.7083ii	33.0227iv	+ 22	—1.9	—3.3	40 46 39.43	—10 14.13	—1.24	— 72	—18	23.16	+5	67.1
	X 1		26.9540	13.8340	+ 32	+ .4	0	40 41 54.29	— 5 31.44	— 20	+ 6	— 9	22.62	+5	66.4
	2		31.1440iv	11.5647ii	— 4	+1.8	+ .6	40 28 7.25	+ 8 14.48	+1.29	+ 36	+16	23.54	+4	
	3		22.4313	20.3107	+ 17	+1.8	+2.9	40 35 28.91	+ 53.60	+ 10	+ 65	+ 2	23.28	+4	
	4		27.8917iv	13.2423ii	— 17	+1.2	+1.2	40 30 10.89	+ 6 9.94	+1.18	+ 34	+10	22.45	+4	
	5		10.4913ii	31.9447iv	+ 9	—2.1	—1.6	40 45 26.84	— 9 1.84	—1.13	— 54	—21	23.12	+3	65.9
	6		19.5380	23.3507	+ 32	+2.2	+1.9	40 34 45.88	+ 1 36.37	+ 15	+ 59	+ 3	23.02	+3	65.1
	7		26.3043	15.7270	+ 63	+1.5	+1.3	40 31 55.13	+ 4 27.30	+ 27	+ 40	+ 8	23.18	+3	66.4
	8		10.6707	31.1373	+109	— .1	+3.7	40 45 0.55	— 8 37.18	— 35	+ 45	—14	23.33	+2	
	9		11.1797	29.4040	+ 31	— .5	0	40 44 4.20	— 7 40.35	— 30	— 8	—14	23.33	+2	66.2

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
June															
23	X 10	R	33.2763iv	8.4173ii	+ 25	+1.3	+ .1	40 46 52.17	—10 27.89	—1.25	+ 22	—19	40 36 23.06	+2	66.1
	I 4	D	18.0063	22.2930	+ 4	—1.7	—1.8	40 34 35.36	+ 1 48.28	+ 15	— 50	+ 3	23.32	—3	62.5
	5		17.8153	23.3337	+ 19	+ .4	+ .6	40 34 3.63	+ 2 19.42	+ 17	+ 14	+ 4	23.40	—3	62.6
	6		18.0663	19.4287	— 9	—1.4	—3.2	40 35 49.62	+ 34.39	+ 12	— 63	+ 1	23.51	—3	
	8		31.6207iv	7.1690ii	— 16	— .6	— .6	40 26 3.82	+10 17.52	+1.36	— 17	+18	22.71	—4	61.5
	9		26.5480	13.9097	+ 17	+ .8	+1.4	40 31 3.00	+ 5 19.24	+ 31	+ 30	+ 9	22.94	—4	
	10		14.2050	24.8890	— 29	—2.5	—2.4	40 40 53.46	— 4 29.77	— 9	— 70	—11	22.79	—4	62.1
	II 1		19.4183	19.0180	0	+1.5	+ .3	40 36 32.75	— 10.11	+ 12	+ 28	0	23.04	—4	61.2
June	2		19.2223	19.0240	0	— .3	0	40 36 17.83	+ 5.01	+ 10	— 5	0	22.89	—5	60.8
24	IX 3	D	22.0947	15.3017	— 53	— .7	0	40 39 14.75	— 2 51.43	— 8	— 11	— 4	23.09	+6	70.4
	4		21.0437	20.1627	+ 3	+ .6	+ .5	40 36 0.85	+ 22.26	+ 8	+ 16	0	23.35	+6	
	5		21.5587	17.9527	— 4	+1.0	+ .3	40 37 53.57	— 1 31.06	0	+ 20	— 3	22.68	+5	69.4
	6		18.5973	20.3283	— 5	— .5	—1.5	40 37 5.94	— 43.70	+ 6	— 27	— 1	22.02	+5	
	7		32.4180iv	8.0760ii	+ 7	— .2	—1.1	40 46 39.65	—10 14.79	—1.24	— 17	—18	23.27	+5	67.8
	X 1		14.3093	27.4360	+ 68	+ .6	0	40 41 54.53	— 5 31.69	— 20	+ 10	— 9	22.65	+5	67.6
	3		18.5103	20.6667	— 5	+ .3	— .3	40 35 29.16	+ 54.45	+ 10	+ 1	+ 2	23.74	+4	67.4
	4		12.3460ii	27.0160iv	+ 11	+ .1	+ .4	40 30 11.15	+ 6 10.53	+1.18	+ 6	+10	23.02	+4	
	5		30.2443iv	8.7633ii	— 5	— .6	—1.1	40 45 27.07	— 9 2.50	—1.13	— 24	—21	22.99	+3	66.8
	6		21.0077	17.1453	— 22	—1.6	—2.5	40 34 46.15	+ 1 37.49	+ 15	— 57	+ 3	23.25	+3	66.6
	7		15.1433	25.7557	+ 28	—2.3	—3.2	40 31 55.42	+ 4 28.10	+ 28	— 77	+ 8	23.11	+3	65.9
	8		29.8363	9.3560	— 50	— .8	— .3	40 45 0.85	— 8 37.11	— 35	— 16	—14	23.09	+3	
	9		29.3647	11.1307	+ 28	—1.7	—2.6	40 44 4.50	— 7 40.58	— 30	— 60	—14	22.88	+2	65.1
June	10		6.4433ii	31.2977iv	— 33	—2.1	—3.3	40 46 52.49	—10 27.63	—1.25	— 75	—19	22.67	+2	64.6
28	I 5	R	22.9583	17.4777	+ 6	—1.5	—2.5	40 34 5.35	+ 2 18.44	+ 17	— 56	+ 4	23.44	—3	54.8
	6		22.6363	21.3697	+ 15	— .2	— .7	40 35 51.17	+ 32.03	+ 11	— 12	+ 1	23.20	—2	54.6
	7		11.5000	30.9350	+139	—1.5	—2.4	40 28 12.10	+ 8 11.24	+ 46	— 54	+15	23.41	—3	
	8		9.3090ii	33.7343iv	+ 40	—1.7	—2.6	40 26 5.50	+10 17.04	+1.36	— 60	+18	23.48	—3	54.6
	9		15.1450	27.7253	+107	+1.3	+1.3	40 31 4.67	+ 5 18.02	+ 31	+ 37	+ 9	23.46	—4	
	10		27.4343	16.7430	+132	—1.6	—2.0	40 40 54.86	— 4 30.37	— 9	— 50	—11	23.79	—4	
	II 1		21.6243	22.0480	+ 6	—1.3	—1.3	40 36 34.14	— 10.72	+ 12	— 37	0	23.17	—4	54.2
	2		21.4737	21.6243	0	+ .3	0	40 36 19.26	+ 3.80	+ 10	+ 5	0	23.21	—4	
	3		30.0330	12.2637	+119	—2.0	—1.9	40 28 53.74	+ 7 29.12	+ 43	— 56	+14	22.87	—5	53.6
	4		21.1680	25.0107	+ 70	— .9	— .7	40 38 0.07	— 1 37.23	+ 2	— 24	— 3	22.59	—5	
	5		30.5647iv	12.2340ii	— 13	—1.0	0	40 28 38.98	+ 7 42.97	+1.24	— 16	+13	23.16	—5	53.2
	6		9.9397ii	30.7207iv	0	— .5	—1.5	40 27 36.87	+ 8 44.88	+1.28	— 27	+14	22.90	—6	52.8
	7		29.7860iv	13.3887ii	— 34	— .2	+ .1	40 29 27.22	+ 6 54.07	+1.19	— 2	+12	22.58	—6	53.1
June	8		14.1653	28.7677	+126	+1.3	+2.3	40 42 32.49	— 6 9.15	— 22	+ 50	—10	23.52	—6	52.9
30	I 5	D	17.9690	23.3910	+ 23	+1.0	0	40 34 5.96	+ 2 17.01	+ 17	+ 16	+ 4	23.34	—2	60.1
	6		19.4397	20.6543	+ 1	+1.2	+1.9	40 35 51.73	+ 30.68	+ 11	+ 43	+ 1	22.96	—2	60.3
	7		30.6453	11.2793	+110	— .9	— .7	40 28 12.69	+ 8 9.41	+ 46	— 24	+15	22.47	—3	
	8		33.0570iv	8.7030ii	+ 23	— .2	+1.0	40 26 6.11	+10 15.17	+1.36	+ 10	+18	22.92	—3	60.1
	9		28.1040	15.5843	+136	+2.4	+1.2	40 31 5.29	+ 5 16.56	+ 31	+ 53	+ 9	22.78	—3	
	10		14.6523	25.4370	+ 3	+1.4	+1.6	40 40 55.37	— 4 32.40	— 9	+ 42	—11	23.19	—3	60.2
	II 1		19.5570	19.0677	0	+2.1	+1.5	40 36 34.66	— 12.36	+ 12	+ 52	0	22.94	—3	
	2		19.8407	19.7203	0	+ .8	— .2	40 36 19.57	+ 3.04	+ 10	+ 10	0	22.81	—4	
	3		11.0717	28.8040	— 5	+ .6	— .9	40 28 54.31	+ 7 27.85	+ 43	— 2	+14	22.71	—4	59.2b
	4		21.1603	17.2820	— 19	— .1	— .3	40 38 0.60	— 1 37.92	+ 2	— 6	— 3	22.61	—4	
	5		11.1793ii	29.4767iv	+ 0	+ .3	+ .9	40 28 39.54	+ 7 42.14	+1.24	+ 16	+13	23.21	—5	58.6
	6		30.3803iv	9.6393ii	0	— .4	— .5	40 27 37.42	+ 8 43.86	+1.28	— 13	+14	22.57	—5	58.6
	7		12.2943ii	28.6723iv	— 11	+2.2	+1.6	40 29 27.77	+ 6 53.64	+1.19	+ 55	+12	23.27	—6	
July	8		26.9360	12.2847	— 33	+2.4	+1.4	40 42 33.01	— 6 9.96	— 22	+ 56	—10	23.29	—6	58.6
2	X 1	R	27.1200	13.9180	+ 39	+ .9	+ .5	40 41 55.87	— 5 33.52	— 26	+ 20	—10	22.19	+6	73.3
	2		31.4883iv	11.9830ii	— 5	+ .6	+ .3	40 28 8.74	+ 8 12.60	+1.36	+ 14	+16	23.00	+5	
	3		22.1057	20.0393	+ 13	+ .6	+2.2	40 35 30.62	+ 52.22	+ 11	+ 38	+ 2	23.35	+5	73.1
	4		28.5743iv	13.9883ii	— 41	+1.4	+3.0	40 30 12.72	+ 6 8.26	+1.23	+ 60	+10	22.91	+5	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
July 2	X 5	R	10.6040ii	32.1407iv	+ 11	— .1	+ .9	40 45 28.38	— 9 3.94	—1.22	+ 10	—21	40 36 23.11	+4	72.0
	6		19.7380	23.4900	+ 36	+ .9	+1.0	40 34 47.77	+ 1 34.85	+ 16	+ 26	+ 3	23.07	+4	71.3
	7		26.7347	16.2197	+ 91	— .3	—2.1	40 31 57.27	+ 4 25.79	+ 32	— 32	+ 8	23.14	+4	71.2
	8		10.2417	30.8210	+ 64	+ .9	+2.6	40 45 2.71	— 8 39.90	— 43	+ 47	—16	22.69	+3	
	9		12.0870	30.4140	+136	+ .9	+1.8	40 44 6.42	— 7 43.20	— 37	+ 37	—14	23.08	+3	71.4
	10		32.8347iv	7.8677ii	+ 12	+2.1	— .4	40 46 54.59	—10 30.58	—1.35	+ 28	—19	22.75	+3	*b*
	XI 1		30.4047	14.0477	+215	0	—2.1	40 43 17.62	— 6 53.64	— 29	— 27	—15	23.27	+2	69.6
	2		8.9947ii	33.7710iv	+ 40	— .8	— .6	40 46 50.78	—10 25.83	—1.29	— 20	—24	23.22	+2	68.6
	3		8.9437ii	33.7173iv	+ 38	+2.0	+3.2	40 25 55.51	+10 25.76	+1.46	+ 72	+18	23.63	+2	68.4
	4		7.0167ii	31.6500iv	— 18	+ .6	+ .8	40 26 0.09	+10 22.07	+1.46	+ 20	+18	24.00	+1	69.4
	5		2.4960ii	34.9680iv	— 93	+1.9	+3.2	40 22 41.24	+13 39.85	+1.66	+ 70	+25	23.70	+1	
	6		26.8447	15.4897	+ 79	+ .6	+2.3	40 31 35.20	+ 4 46.97	+ 34	+ 39	+10	23.00	+1	
	7		19.1687	22.9393	+ 23	+ .8	+1.4	40 37 58.11	— 1 35.28	— 3	+ 30	— 3	23.07	0	69.5
	8		22.6033	20.9513	+ 18	+1.1	— .3	40 37 4.51	— 41.76	+ 3	+ 13	— 1	22.90	0	
	I 1		17.8053	24.4633	+ 45	—1.0	—1.9	40 33 35.40	+ 2 48.26	+ 22	— 40	+ 5	23.53	0	68.6
July 5	I 6	R	21.9923	20.8233	+ 9	+2.0	+1.3	40 35 53.02	+ 29.55	+ 12	+ 48	+ 1	23.18	—2	69.3
	7		11.2987	30.5943	+108	+1.3	+ .3	40 28 14.06	+ 8 7.59	+ 53	+ 24	+15	22.57	—2	
	8		8.1627ii	32.4820iv	+ 9	+1.9	+ .5	40 26 7.55	+10 14.22	+1.45	+ 36	+18	23.76	—2	67.9
	9		15.0097	27.5170	+ 91	+1.2	+1.4	40 31 6.73	+ 5 16.11	+ 36	+ 36	+ 8	23.64	—3	67.7
	10		28.2990	17.5080	+186	— .1	+ .3	40 40 56.54	— 4 33.00	— 13	+ 2	—12	23.31	—3	67.8
	II 1		22.5587	23.0617	+ 8	+ .3	+1.4	40 36 35.83	— 12.73	+ 12	+ 22	0	23.44	—3	
	2		22.8630	22.9290	0	+ .4	+ .4	40 36 20.96	+ 1.67	+ 10	+ 11	0	22.84	—3	67.8
	3		30.2183	12.5317	+142	—1.5	—1.9	40 28 55.58	+ 7 27.05	+ 50	— 47	+14	22.80	—4	67.7*b*
	4		19.3120	23.2320	+ 31	—1.3	0	40 38 1.78	— 1 39.08	+ 1	— 20	— 3	22.48	—4	67.9
	6		9.5040ii	30.1910iv	0	+1.8	+1.0	40 27 38.68	+ 8 42.46	+1.36	+ 40	+15	23.05	—5	67.4
	7		28.9993iv	12.6640ii	— 20	+1.2	+ .6	40 29 29.00	+ 6 52.50	+1.27	+ 26	+12	23.15	—5	
July 7	8		15.0347	29.6753	+204	+ .3	+1.9	40 42 34.17	— 6 10.27	— 23	+ 28	—11	23.84	—5	66.9
	X 1	D	14.1410	27.3387	+ 57	— .9	—2.2	40 41 56.78	— 5 33.44	— 26	— 42	—10	22.56	+6	72.0
	2		9.8157ii	29.3097iv	0	— .4	—1.2	40 28 9.59	+ 8 12.31	+1.36	— 22	+16	23.20	+6	
	3		19.1900	21.2513	+ 3	— .4	—1.5	40 35 31.59	+ 52.07	+ 11	— 25	+ 2	23.54	+6	71.9
	4		12.8797ii	27.4553iv	— 6	+ .1	+ .3	40 30 13.75	+ 6 8.09	+1.23	+ 6	+10	23.23	+6	
	5		30.8040iv	9.2333ii	0	+ .4	0	40 45 29.25	— 9 4.76	—1.21	+ 6	—21	23.13	+5	71.9
	6		22.2947	18.5907	+ 11	+ 3	+1.1	40 34 48.84	+ 1 33.57	+ 16	+ 18	+ 3	22.78	+5	72.0
	7		15.1987	25.6657	+ 28	+ .6	0	40 31 58.47	+ 4 24.41	+ 31	+ 10	+ 8	23.37	+5	
	8		30.1657	9.5700	— 17	0	— .4	40 45 3.90	— 8 40.10	— 41	— 5	—16	23.18	+4	71.9
July 9	9		29.8167	11.4430	+ 67	+ .1	— .4	40 44 7.65	— 7 44.19	— 37	— 4	—14	22.91	+4	71.9
	X 1	R	27 2673	14.0463	+ 53	+ .5	+ .1	40 41 57.12	— 5 34.03	— 26	+ 9	—10	22.82	+7	71.8
	2		30.3357iv	10.8540ii	0	+ .4	+1.3	40 28 9.92	+ 8 12.01	+1.36	+ 22	+16	23.67	+6	72.4
	3		21.5233	19.4820	+ 5	— .6	—1.8	40 35 31.97	+ 51.57	+ 11	— 32	+ 2	23.35	+6	
	4		28.4437iv	13.8733ii	— 37	—1.8	— .5	40 30 14.16	+ 6 7.89	+1.23	— 34	+10	23.04	+6	
	5		9.3473ii	30.8893iv	0	—1.3	—2.2	40 45 29.61	— 9 4.05	—1.22	— 48	—21	23.65	+5	70.1
	6	D	21.7017	17.9713	— 4	— .7	—1.3	40 34 49.27	+ 1 34.20	+ 16	— 28	+ 3	23.38	+5	69.0
	7		15.3583	25.8387	+ 35	—1.9	—3.7	40 31 58.96	+ 4 24.77	+ 32	— 76	+ 8	23.37	+5	
	8		29.8523	9.2583	— 56	—1.1	—2.0	40 45 4.40	— 8 39.97	— 43	— 42	—16	23.42	+5	
	9		29.2620	10.8830	+ 7	+ .9	+1.1	40 44 8.17	— 7 44.19	— 37	+ 28	—14	23.75	+4	68.8
	10		7.8480ii	32.8757iv	+ 10	+ .2	— .2	40 46 56.49	—10 32.11	—1.35	0	—19	22.84	+4	67.6
	XI 1		11.3877	27.8567	— 35	+ .4	+ .6	40 43 19.37	— 6 55.84	— 29	+ 14	—15	23.23	+3	67.8
	2		31.4710iv	6.5753ii	— 28	+1.1	+1.2	40 46 52.56	—10 28.68	—1.30	+ 32	—24	22.66	+3	67.0
	3		33.2730iv	8.5813ii	+ 28	+1.8	+1.6	40 25 57.60	+10 23.67	+1.46	+ 48	+18	23.39	+3	67.8
	4		32.9073iv	8.4010ii	+ 17	+3.6	+3.4	40 26 2.19	+10 18.95	+1.46	+1.00	+18	23.78	+2	
	5		32.9877iv	0.5640ii	—237	— .6	+ .3	40 22 43.32	+13 38.27	+1.66	— 6	+25	23.44	+2	67.6
	6		14.1247	25.4313	— 17	— .6	—1.0	40 31 37.26	+ 4 45.51	+ 34	— 22	+10	22.99	+2	
	7		22.7420	18.8887	+ 19	+ .5	— .8	40 38 0.32	— 1 37.36	— 3	— 2	— 3	22.88	+1	
	8		19.6200	21.3637	+ 4	—2.0	— .4	40 38 6.66	— 44.05	+ 2	— 36	— 1	22.26	+1	67.6
	I 1		23.4930	16.9770	+ 10	+ .2	+ .2	40 33 37.66	+ 2 44.59	+ 21	+ 6	+ 5	22.57	+1	66.6

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
July 9	I 6	D	19.6533	20.8070	0	— .3	— .3	° ′ ″ 40 35 54.30	+ 29.14	+ 12	— 8	+ 1	° ′ ″ 40 36 23.49	—1	65.1
	7		29.5663	10.2850	— 8	—1.6	—1.5	40 28 15.39	+ 8 6.95	+ 53	— 44	+15	22.58	—2	
	8		32.8947iv	8 6827ii	+ 20	+3.3	+4.0	40 26 8.94	+10 11.56	+1.45	+1.02	+18	23.15	—2	64.6
	9		26.9150	14.4367	+ 47	—1.9	—1.5	40 31 8.11	+ 5 15.28	+ 36	— 48	+ 8	23.35	—2	
	10		13.0993	23.9783	— 95	+ .2	0	40 41 57.69	— 4 34.52	— 13	+ 3	—12	22.95	—2	
	II 1		20.3340	19.7817	0	+ .5	0	40 36 36.98	— 13.95	+ 12	+ 8	0	23.23	—2	64.5
	2		20.0617	20.0243	0	— .3	— .7	40 36 22.14	+ 0.94	+ 10	— 14	0	23.04	—3	64.6
	3		10.5347	28.1950	— 67	— .1	—1.1	40 28 56.82	+ 7 25.86	+ 49	— 16	+14	23.15	—3	
	4		21.2237	17.2670	— 19	— .7	—2.0	40 38 2.93	— 1 39.89	0	— 36	— 3	22.65	—3	
	5		11.9113	30.1110	+109	— .1	— .4	40 28 42.05	+ 7 39.93	+ 50	— 6	+13	22.55	—4	63.6
	6		30.0493iv	9.3653ii	0	—2.8	—2.1	40 27 39.88	+ 8 42.40	+1.36	— 70	+15	23.09	—4	
	8		28.0423	13.3577	+ 60	— 0	— .6	40 42 35.28	— 6 11.03	— 28	— 8	—11	23.78	—5	62.8a
July 10	III 1		17.3677	25.1443	+ 57	— .8	— .9	40 39 40.23	— 3 16.55	— 13	— 24	— 5	23.26	—5	63.0
	X 1	R	27.0117	13.7987	+ 31	—1.2	—1.3	40 41 57.26	— 5 33.78	— 26	— 35	—10	22.77	+7	65.8
	2		31.6203iv	12.1177ii	— 5	—2.2	—2.1	40 28 10.06	+ 8 12.55	+1.36	— 61	+16	23.52	+6	65.8
	3		23.3857	21.3243	+ 30	—2.0	—1.6	40 35 32.12	+ 52.14	+ 11	— 52	+ 2	23.87	+6	
	4		27.9373iv	13.3770ii	— 23	—3.3	—2.4	40 30 14.34	+ 6 7.68	+1.23	— 82	+10	22.53	+6	65.1
	5		12.4700ii	34.0323iv	+ 29	—1.0	— .8	40 45 29.76	— 9 4.65	—1.22	— 26	—21	23.42	+5	65.1
	6		19.9010	23.5767	+ 39	+ .7	+ .5	40 34 49.46	+ 1 32.94	+ 16	+ 18	+ 3	22.77	+5	65.0
	7		24.5070	14.0523	— 43	+ .3	— .3	40 31 59.18	+ 4 23.93	+ 31	0	+ 8	23.50	+5	
	8		9.6480	30.2830	— 4	— .1	0	40 45 4.63	— 8 41.15	— 44	— 2	—16	22.86	+5	65.3
	9		9.5783	27.9903	—132	—1.5	— .6	40 44 8.41	— 7 44.69	— 37	— 30	—14	22.91	+5	65.1
	10		32.5910iv	7.5593ii	0	— .8	—1.6	40 46 56.75	—10 32.20	—1.35	— 33	—19	22.68	+4	
	XI 1		29.5880	13.1247	+130	+ .1	— .2	40 43 19.62	— 6 56.13	— 30	— 1	—15	23.03	+3	64.1
	2		8.8467ii	33.6790iv	+ 37	—1.3	—1.6	40 46 52.82	—10 27.26	—1.30	— 40	—24	23.62	+3	63.4
	3		7.4280ii	32.1093iv	— 8	+1.8	+2.1	40 25 57.93	+10 23.33	+1.46	+ 55	+18	23.45	+3	
	4		6.9580ii	31.4873iv	— 20	+ .2	+1.8	40 26 2.50	+10 19.46	+1.46	+ 26	+18	23.86	+3	63.5
	5		2.8760ii	35.2710iv	— 67	+ .9	+ .3	40 22 43.63	+13 38.01	+1.66	+ 18	+25	23.73	+2	
	6		25.2790	13.9863	— 25	—1.8	—1.0	40 31 37.57	+ 4 45.15	+ 34	— 40	+10	22.76	+2	
	7		17.3310	21.2200	— 18	+ .2	+1.6	40 38 0.65	— 1 38.18	— 3	+ 24	— 3	22.65	+2	63.1
	8		21.8343	20.0823	+ 10	+1.4	— .2	40 37 7.00	— 44.27	+ 2	+ 19	— 1	22.93	+1	62.9
	I 1		16.3867	22.9130	— 15	+ .2	— .5	40 33 38.00	+ 2 44.79	+ 22	— 4	+ 5	23.02	+1	62.6
	II 1	R	21.6597	22.2307	+ 7	+ .6	+ .4	40 36 37.29	— 14.44	+ 12	+ 14	0	23.11	—2	59.4
	2		22.3490	22.3663	0	+1.2	— .4	40 36 22.46	+ 0.44	+ 10	+ 14	0	23.14	—3	
	3		29.6337	12.0000	+ 86	—2.1	—2.2	40 28 57.16	+ 7 25.59	+ 49	— 60	+14	22.78	—3	59.6
	4		20.3320	24.2683	+ 54	—1.4	—2.5	40 38 3.25	— 1 39.56	+ 1	— 54	— 3	23.13	—3	
	5		28.6713ii	10.4980ii	+ 3	— .8	+1.2	40 28 42.40	+ 7 39.01	+1.31	+ 3	+13	22.88	—4	
	6		9.5130ii	30.1497iv	0	+ .6	+1.4	40 27 40.21	+ 8 41.23	+1.36	+ 28	+15	23.23	—4	58.9
	7		28.3140iv	12.0343ii	— 3	+ .3	+ .1	40 29 30.50	+ 6 51.17	+1.25	+ 6	+12	23.10	—4	
	8		12.2887	27.0183	— 31	+ .2	0	40 42 35.60	— 6 11.95	— 28	+ 3	—11	23.29	—5	58.6
	9		22.5473	20.4667	+ 18	— .9	—1.0	40 37 15.87	— 52.59	+ 7	— 26	— 2	23.07	—4	
	III 1		23.8270	16.0307	— 3	+ .7	— .4	40 39 40.53	— 3 16.90	— 13	+ 6	— 5	23.51	—5	
July 11	2		33.1627iv	4.0877ii	— 73	—2.3	—1.7	40 24 7.73	+12 14.15	+1.58	— 57	+23	23.12	—5	57.7
	X 1		13.8533	27.1150	+ 38	+2.2	+2.2	40 41 57.39	— 5 35.02	— 26	+ 62	—10	22.63	+7	70.5
	2		10.7100ii	30.1543iv	0	+ .9	+ .3	40 28 10.17	+ 8 11.07	+1.36	+ 18	+16	22.94	+6	
	3		19.0660	21.0820	0	+ .7	+ .8	40 35 32.26	+ 50.91	+ 11	+ 21	+ 2	23.51	+6	
	4		12.3480ii	26.8707iv	+ 13	+1.3	— .1	40 30 14.49	+ 6 6.80	+1.23	+ 18	+10	22.80	+6	
	5		30.4780iv	8.8593ii	0	+ .5	+1.9	40 45 29.89	— 9 5.98	—1.22	+ 32	—21	22.80	+5	70.6
	6		22.0467	18.3390	+ 3	—2.1	—2.4	40 34 49.63	+ 1 33.64	+ 16	— 63	+ 3	22.83	+5	70.1
	7		15.8743	26.2830	+ 67	+ .4	0	40 31 59.39	+ 4 23.04	+ 31	+ 6	+ 8	22.88	+5	
	8		30.6780	10.0310	+ 44	+1.6	+1.1	40 45 4.84	— 8 41.55	— 44	+ 39	—16	23.08	+5	71.0
	9		29.2130	10.7777	0	+2.4	+ .9	40 44 8.63	— 7 45.58	— 37	+ 48	—14	23.02	+5	
	10		7.2340ii	32.2860iv	— 9	—1.2	— .1	40 46 56.99	—10 32.66	—1.35	— 20	—19	22.59	+4	70.6
	XI 1		12.0873	28.5880	+ 33	+1.3	+ .7	40 43 19.85	— 6 56.81	— 30	+ 29	—15	22.88	+4	
	2		30.4047iv	5.4917ii	— 59	+1.6	+1.2	40 46 53.07	—10 29.03	—1.30	+ 38	—24	22.88	+3	70.4

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
July 16	X 1	R	27.6787	14.4277	+ 83	+ .4	0	40 41 57.86	— 5 34.85	— 26	+ 6	—10	40 36 22.71	+7	77.8
	2		31.8787iv	12.4063ii	— 7	—1.8	—1.5	40 28 10.61	+ 8 11.73	+1.36	— 47	+16	23.39	+7	
	3		22.2077	20.2197	+ 14	— .1	+ .1	40 35 32.82	+ 50.24	+ 11	0	+ 2	23.19	+7	
	4		28.1850iv	13.6463ii	— 30	—2.6	—2.8	40 30 15.11	+ 6 7.08	+1.23	— 76	+10	22.76	+7	
	5		10.5920ii	32.2093iv	+ 13	0	0	40 45 30.38	— 9 5.95	—1.22	0	—21	23.00	+6	77.8
	6		19.9397	23.6220	+ 39	+ .3	+ .9	40 34 50.31	+ 1 33.09	+ 16	+ 16	+ 3	23.75	+6	
	7		26.7013	16.2867	+ 92	—2.4	—1.6	40 32 0.21	+ 4 23.24	+ 31	— 58	+ 8	23.26	+6	77.7
	8		11.0117	31.6497	+163	—1.0	—1.2	40 45 5.68	— 8 41.60	— 44	— 31	—16	23.17	+6	
July 17	X 9	D	29.4583	11.0133	+ 27	—1.1	— .7	40 44 9.71	— 7 45.88	— 37	— 26	—14	23.06	+5	75.0
	10		7.7450ii	32.8463iv	+ 7	— .4	+ .8	40 46 58.22	—10 33.94	—1.35	+ 4	—19	22.78	+5	74.4
	XI 1		11.3107	27.8533	— 40	+ .7	+ .8	40 43 20.97	— 6 57.67	— 30	+ 21	—15	23.06	+4	73.4
	2		31.1647iv	6.2357ii	— 39	—1.1	—1.5	40 46 54.24	—10 29.47	—1.30	— 36	—24	22.87	+4	73.1
	3		32.5980iv	7.9413ii	+ 7	—2.7	—5.2	40 25 59.68	+10 22.71	+1.46	—1.08	+18	22.95	+4	
	4		32.4567iv	8.0087ii	+ 8	+ .7	+1.0	40 26 4.25	+10 17.44	+1.46	+ 24	+18	23.57	+4	
	5		34.2337iv	1.8913ii	—141	— .3	0	40 22 45.39	+13 36.43	+1.66	— 4	+25	23.69	+3	
	6		13.3687	24.6237	— 68	—1.5	—1.4	40 31 39.33	+ 4 44.07	+ 34	— 41	+10	23.43	+3	71.4
	7		21.1387	17.1987	— 20	0	+ .3	40 38 2.57	— 1 39.45	— 3	+ 4	— 3	23.10	+3	71.4
	8		19.0943	20.9577	0	+2.0	+3.6	40 37 8.97	— 47.06	+ 1	+ 77	— 1	22.68	+2	
	I 1		23.9377	17.4937	+ 27	—1.4	—1.3	40 33 40.02	+ 2 42.81	+ 21	— 38	+ 5	22.71	+2	71.2
	II 1	D	20.0883	19.4597	0	— .7	—2.1	40 36 39.17	— 15.88	+ 12	— 38	0	23.03	—2	70.4
	2		19.5030	19.5173	0	—5.2	—5.4	40 36 24.40	— 0.36	+ 10	—1.50	0	22.64	—2	
	3		10.8740	28.4550	— 35	— .4	—2.1	40 28 59.26	+ 7 23.92	+ 49	— 33	+14	23.48	—2	70.3
	4		21.4727	17.4160	— 15	+1.3	+ .1	40 38 5.21	— 1 42.41	0	+ 22	— 3	22.99	—2	
	5		11.1807ii	29.2797iv	— 2	+ .2	+ .9	40 28 44.54	+ 7 37.09	+1.30	+ 14	+13	23.20	—3	69.8
	6		30.0727iv	9.5100ii	0	— .7	—1.7	40 27 42.34	+ 8 39.32	+1.35	— 32	+15	22.84	—3	70.0
	7		11.1977ii	27.3733iv	+ 19	+2.0	+1.0	40 29 32.60	+ 6 48.57	+1.25	+ 44	+12	22.98	—4	
	8		26.4617	11.6497	— 84	+1.3	+ .4	40 42 37.60	— 6 13.86	— 28	+ 25	—11	23.60	—4	69.6
	9		18.4757	20.6503	— 5	+ .3	— .8	40 37 17.65	— 54.91	+ 7	— 6	— 2	22.73	—4	
	III 1		16.3170	24.1957	+ 11	0	+1.4	40 39 42.49	— 3 19.00	— 13	+ 18	— 5	23.49	—4	
	2		3.6577ii	32.6450iv	— 99	0	— .4	40 24 9.61	+12 11.83	+1.58	— 5	+23	23.20	—4	69.4
July 18	3		24.6450	13.9470	— 44	+ .4	0	40 40 53.38	— 4 30.07	— 19	+ 6	— 9	23.09	—4	
	X 1	D	13.3433	26.6150	— 4	+1.4	+2.2	40 41 58.10	— 5 35.15	— 26	+ 50	—10	23.09	+7	77.0
	2		10.0723ii	29.5023iv	0	+1.2	+ .6	40 28 10.84	+ 8 10.69	+1.36	+ 26	+16	23.31	+7	
	3		18.2310	20.2230	— 9	+ .1	+ .2	40 35 33.09	+ 50.28	+ 11	+ 4	+ 2	23.54	+7	
	4		13.5567ii	28.0723iv	— 29	—1.2	+1.1	40 30 15.41	+ 6 6.51	+1.23	— 4	+10	23.21	+7	
	5		30.9617iv	9.3207ii	0	+ .3	— .4	40 45 30.63	— 9 6.53	—1.22	0	—21	22.67	+6	76.9
	6		21.2037	17.5437	— 17	—2.1	—2.0	40 34 50.64	+ 1 32.39	+ 16	— 58	+ 3	22.64	+6	77.4
	7		14.8197	25.1927	0	+ .6	— .5	40 32 0.59	+ 4 21.96	+ 31	+ 3	+ 8	22.97	+6	75.6
	8		30.0613	9.3547	— 39	+ .8	+1.4	40 45 6.06	— 8 42.82	— 44	+ 30	—16	22.94	+6	75.1
	9		29.4443	10.9603	+ 19	+ .7	+ .4	40 44 9.91	— 7 46.84	— 37	+ 16	—14	22.72	+6	74.8
	II 3	R	29.0473	11.5020	+ 27	—1.9	—2.5	40 28 59.54	+ 7 23.18	+ 49	— 62	+14	22.73	—2	70.5
	4		18.8000	22.8893	+ 21	+ .8	+ .8	40 38 5.46	— 1 43.33	0	+ 22	— 3	22.32	—2	
	5		29.7623iv	11.6830ii	— 8	—1.2	0	40 28 44.81	+ 7 36.58	+1.30	— 18	+13	22.64	—3	
	6		10.2233ii	30.7553iv	0	+1.8	+ .5	40 27 42.60	+ 8 38.54	+1.35	+ 34	+15	22.98	—3	70.5
	7		28.0950iv	11.9253ii	0	— .4	— .8	40 29 32.86	+ 6 48.37	+1.25	— 16	+12	22.44	—4	
	8		13.5963	28.4110	+ 86	— .2	0	40 42 37.85	— 6 14.36	— 28	— 3	—11	23.07	—4	70.5
	9		22.6680	20.4983	+ 20	+1.6	+2.0	40 37 17.86	— 54.85	+ 7	+ 50	— 2	23.56	—3	
	III 1		23.2737	15.3780	— 30	+1.8	+ .8	40 39 42.74	— 3 19.33	— 13	+ 38	— 5	23.61	—4	69.8
	2		35.0683iv	6.0940ii	+ 31	0	— .5	40 24 9.84	+12 11.83	+1.58	— 6	+23	23.42	—4	70.3
	3		13.1503	23.8647	— 96	+1.2	+ .6	40 40 53.60	— 4 30.35	— 19	+ 26	— 9	23.23	—4	
July 19	5		22.9390	19.2897	+ 24	+1.8	+ .7	40 37 54.90	— 1 32.22	— 2	+ 37	— 3	23.00	—5	70.4
	X 9	R	10.9107	29.3633	+ 13	— .8	—1.4	40 44 10.13	— 7 46.05	— 37	— 30	—14	23.27	+6	71.3
	10		32.7253iv	7.6237ii	+ 4	+ .4	+ .2	40 46 58.68	—10 33.95	—1.35	+ 8	—19	23.27	+5	71.0
	XI 1		29.5917	13.0200	+127	+ .8	+2.2	40 43 21.40	— 6 58.84	— 30	+ 40	—15	22.51	+4	71.2

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
July 19	XI 2	R	8.6400ii	33.6043iv	+ 33	+1.5	+1.7	40 46 54.68	−10 30.56	−1.30	+ 44	−24	40 36 23.02	+4	
	3		8.7527ii	33.3073iv	+ 28	+4.5	+3.5	40 26 0.21	+10 20.20	+1.46	+1.14	+18	23.19	+4	
	4		8.5790ii	33.0183iv	+ 21	−2.4	−1.7	40 26 4.78	+10 17.27	+1.46	− 59	+18	23.10	+4	
	5		2.2243ii	34.5130iv	−117	+1.7	+2.0	40 22 45.91	+13 35.16	+1.66	+ 52	+25	23.50	+3	70.6
	6		26.9257	15.7300	+ 88	−2.5	− .5	40 31 39.85	+ 4 42.97	+ 34	− 45	+10	22.81	+3	
	7		18.6720	22.6233	+ 16	−1.7	− .6	40 38 3.14	− 1 39.83	− 3	− 34	− 3	22.91	+3	69.5
	8		23.6360	21.7863	+ 30	+ .2	− .8	40 37 9.54	− 46.79	+ 1	− 7	− 1	22.68	+3	68.4
I	1		17.0553	23.4727	+ 11	+ .2	+ .3	40 33 40.61	+ 2 42.10	+ 21	+ 7	+ 5	23.04	+2	67.9
II	1	D	19.8870	19.2473	− 3	−2.6	−2.1	40 36 39.66	− 16.15	+ 12	− 68	0	22.95	−1	
	2		18.4487	18.4887	0	−1.1	−1.2	40 36 24.91	− 1.01	+ 10	− 32	0	23.68	−2	65.0
	3		10.5123	28.0253	− 76	+ .5	− .3	40 28 59.81	+ 7 22.12	+ 49	+ 4	+14	22.60	−2	
	4		21.1007	17.0170	− 23	+ .7	− .9	40 38 5.71	− 1 43.08	0	0	− 3	22.60	−2	64.1
	5		11.2143ii	29.2880iv	− 3	+ .1	− .1	40 28 45.09	+ 7 36.47	+1.30	0	+13	22.99	−3	
	6		30.8417iv	10.2777ii	0	−2.7	−2.2	40 27 42.88	+ 8 39.37	+1.35	− 70	+15	23.05	−3	64.4
	7		12.6950ii	28.8687iv	− 18	+ .2	+ .2	40 29 33.14	+ 6 48.45	+1.25	+ 6	+12	23.02	−3	63.5
	8		27.4110	12.5830	0	+1.7	+1.4	40 42 38.11	− 6 14.50	− 29	+ 44	−11	23.65	−3	
	9		18.1830	20.3647	− 9	−1.3	−2.2	40 37 18.09	− 55 08	+ 7	− 48	− 2	22.58	−3	61.9
	III 1		16.4080	24.2830	+ 14	−2.1	−1.2	40 39 42.98	− 3 18.93	− 13	− 48	− 5	23.39	−4	
	2		3.8383ii	32.8137iv	− 88	+ .1	− .6	40 24 10.08	+12 11.59	+1.58	− 6	+23	23.42	−4	61.7
	4		25.7973	14.5017	+ 9	− .7	−1.0	40 41 9.59	− 4 45.31	− 21	− 24	− 8	23.75	−5	61.2
July 20	5		17.2027	20.8227	− 21	−1.4	−1.8	40 37 55.09	− 1 31.38	− 2	− 44	− 3	23.22	−4	*d*
	X 3	R	21.5847	19.5897	+ 6	− .5	−1.5	40 35 33.41	+ 50.40	+ 11	− 27	+ 2	23.67	+7	71.2
	4		28.5353iv	14.0330ii	− 43	− .6	− .8	40 30 15.76	+ 6 6.16	+1.23	− 20	+10	23.05	+7	
	5		10.4283ii	32.0523iv	+ 12	−2.0	− .2	40 45 30.93	− 9 6.15	−1.22	− 34	−21	23.01	+6	71.2
	6		19.4043	23.0377	+ 25	+1.0	+ .9	40 34 51.01	+ 1 31.57	+ 16	+ 27	+ 3	23.04	+6	70.4
	7		25.6817	15.2903	+ 31	−2.1	−3.3	40 32 1.00	+ 4 22.51	+ 31	− 74	+ 8	23.16	+6	
	9		28.6180	10.1297	− 68	+ .5	− .2	40 44 10.36	− 7 46.76	− 37	+ 6	−14	23.15	+6	69.9
	10		7.5440ii	32.6557iv	+ 3	− .9	− .6	40 46 58.93	−10 34.21	−1.35	− 22	−18	22.97	+6	70.0
	XI 1		10.5540	27.1370	−112	+1.6	+ .4	40 43 21.64	− 6 58.53	− 30	+ 30	−15	22.96	+5	69.6
	2		31.7517iv	6.7900ii	− 21	+ .2	+ .6	40 46 54.92	−10 30.36	−1.30	+ 10	−24	23.12	+4	
	3		32.3290iv	7.7050ii	0	−1.8	−2.6	40 26 0.49	+10 21.88	+1.46	− 61	+18	23.40	+4	68.9
	4		32.2417iv	7.8020ii	0	− .2	− .5	40 26 5.06	+10 17.23	+1.46	− 10	+18	23.83	+4	68.1
	5		33.5600iv	1.2473ii	−187	−1.6	− .1	40 22 46.17	+13 35.60	+1.66	− 26	+25	23.42	+4	
	6		13.1443	24.3267	− 83	+ .8	+1.0	40 31 40.14	+ 4 42.20	+ 34	+ 25	+10	23.03	+3	68.1
	7		21.7900	17.7950	− 5	+1.3	+1.0	40 38 3.44	− 1 40.88	− 4	+ 32	− 3	22.81	+3	
	8		18.2373	20.0717	− 12	−1.7	−2.2	40 37 9.86	− 46.30	+ 2	− 54	− 1	23.03	+3	67.9
July	9		22.3177	15.8837	− 36	− .6	−1.3	40 33 40.93	+ 2 42.40	+ 21	− 26	+ 5	23.33	+2	66.6
23	II 1	R	20.3730	21.0930	+ 3	+3.2	+1.5	40 36 40.82	− 18.19	+ 11	+ 68	0	23.42	−1	62.9
	2		20.9173	20.8097	0	+2.2	+ .1	40 36 26.10	− 2.72	+ 10	+ 36	0	23.84	−1	63.0
	3		29.3800	11.9387	+ 68	+2.3	+1.2	40 29 1.08	+ 7 20.68	+ 49	+ 51	+14	22.90	−2	
	4		19.1707	23.2750	+ 30	−2.0	− .4	40 38 6.90	− 1 43.74	0	− 36	− 3	22.77	−2	
	5		29.3737iv	11.3717ii	− 5	+ .6	+ .3	40 28 46.37	+ 7 34.66	+1.26	+ 14	+13	22.56	−2	60.9
	6		10.1530ii	30.6240iv	0	+ .6	− .1	40 27 44.15	+ 8 37.03	+1.31	+ 8	+15	22.72	−3	
	7		28.6303iv	12.5073ii	− 15	−1.0	−1.5	40 29 34.38	+ 6 47.17	+1.21	− 34	+12	22.54	−3	61.1
	8		12.9097	27.7463	+ 28	−1.0	−1.0	40 42 39.29	− 6 14.80	− 28	− 28	−11	23.82	−3	
	9		22.4530	20.2540	+ 18	−1.5	− .8	40 37 19.13	− 55.58	+ 7	− 33	− 2	23.27	−3	60.4
	III 1		24.3160	16.3743	+ 16	+ .7	+ .4	40 39 44.12	− 3 20.63	− 13	+ 16	− 5	23.47	−4	59.9
	2		34.3480iv	5.4237ii	− 8	−2.5	− .7	40 24 11.16	+12 10.52	+1.54	− 48	+23	22.97	−4	
	3		13.6327	24.3943	− 63	−1.8	−1.6	40 40 54.87	− 4 31.65	− 19	− 48	− 9	22.46	−4	
	4		13.7677	25.1257	− 38	− .7	+ .5	40 41 10.60	− 4 46.77	− 21	− 4	− 8	23.50	−4	59.2
	5		24.3560	20.6750	+ 56	+1.8	+2.5	40 37 55.99	− 1 33.11	− 2	+ 60	− 3	23.43	−4	
	6		15.5243	29.3150	+197	− .8	−1.0	40 42 13.11	− 5 48.81	− 20	− 25	−14	23.71	−4	58.8
July	7		23.6747	18.0777	+ 31	+ .6	− .1	40 38 44.67	− 2 21.44	− 7	+ 8	− 4	23.20	−5	58.1
27	XI 1	R	29.9867	13.3900	+167	− .6	− .1	40 43 23.04	− 6 59.59	− 38	− 11	−15	22.81	+5	67.6
	2		9.2897ii	34.3117iv	+ 53	+ .8	0	40 46 56.41	−10 32.09	−1.33	+ 12	−24	22.87	+5	66.7

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
July 27	XI 3	R	8.0207ii	32.5150iv	+ 8	+2.4	+1.4	40 26 2.31	+10 18.65	+1.51	+ 55	+18	40 36 23.20	+5	
	4		8.1707ii	32.5137iv	+ 10	— .1	—1.0	40 26 6.88	+10 14.83	+1.50	— 14	+18	23.25	+5	66.3d
	5		2.1437ii	34.3507iv	—126	+1.5	— .6	40 22 48 02	+13 33.11	+1.73	+ 16	+25	23.27	+5	65.8
	6		25.7623	14.6477	+ 14	—2.0	—1.5	40 31 41.98	+ 4 40.75	+ 39	— 50	+10	22.72	+4	64.2
	7		17.9590	22.0057	0	—1.2	—2.0	40 38 5.47	— 1 42.21	— 6	— 44	— 3	22.73	+4	
	8		22.1033	20.1620	+ 12	—1.0	—1.5	40 37 11.93	— 49.06	+ 1	— 34	— 1	22.53	+4	64.0
	I 1		17.7010	24.0183	+ 30	— .9	—1.2	40 33 43.07	+ 2 39.63	+ 24	— 30	+ 5	22.69	+3	63.4
	2		13.1350	27.1493	+ 11	0	0	40 42 17.55	— 5 53.97	— 34	0	—10	23.14	+2	62.6
	3		17.6943	23.2100	+ 16	— .2	— .4	40 34 3.72	+ 2 19.35	+ 22	— 8	+ 3	23.24	+3	62.1
	4		23.7980	19.9707	+ 43	+ .2	— .4	40 34 46.26	+ 1 36.78	+ 17	— 2	+ 3	23.22	+2	
	5		23.5947	18.5147	+ 32	+ .4	+ .1	40 34 14.59	+ 2 8.38	+ 20	+ 8	+ 3	23.28	+2	62.5
	6		21.1357	20.2353	+ 3	— .1	+ .5	40 35 59.53	+ 22.75	+ 12	+ 5	+ 1	22.46	+1	
	7		11.6617	30.6997	+133	— .5	— .4	40 28 20.96	+ 8 1.16	+ 61	— 13	+15	22.75	+1	
	8		8.4913ii	32 5283iv	+ 12	+ .8	—1.2	40 26 14.82	+10 7.12	+1.49	— 3	+17	23.57	+1	62.3
	9		14.5127	26.7410	+ 44	+1.1	— .6	40 31 14.04	+ 5 8.95	+ 41	+ 10	+ 8	23.58	+1	62.4
July 29	10		28.1567	17.1467	+171	— .8	—2.0	40 41 2.63	— 4 38.50	— 18	— 38	—11	23.46	0	61.0
	XI 1	D	11.9133	28.5593	+ 24	+ .7	+ .7	40 43 23.34	— 7 0.44	— 37	+ 20	—15	22.58	+6	75.5
	2		31.5050iv	6.4507ii	— 31	+1.6	+1.6	40 46 56.71	—10 32.66	—1.34	+ 46	—24	22.93	+5	75.5
	3		32.5757iv	8.0780ii	+ 11	—1.0	— .2	40 26 2.70	+10 18.70	+1.50	— 18	+18	22.90	+5	
	4		32.5053iv	8.1603ii	+ 10	— .6	— .3	40 26 7.28	+10 14.84	+1.49	— 14	+18	23.65	+5	
	5		33.5730iv	1.3340ii	—181	—2.3	—1.3	40 22 48.43	+13 33.72	+1.73	— 52	+25	23.61	+5	74.6
	6		14.0610	25.1577	— 26	+ .2	— .1	40 31 42.40	+ 4 40.17	+ 39	+ 2	+10	23.08	+4	
	7		22.5230	18.4567	+ 14	+ .3	— .3	40 38 5.93	— 1 42.73	— 6	0	— 3	23.11	+4	72.9
	8		19.9770	21.9330	+ 11	— .4	—2.6	40 37 12.41	— 49.43	+ 1	— 39	— 1	22.59	+4	72.8d
	I 1		23.4787	17.1610	+ 13	—1.2	+ .5	40 33 43.56	+ 2 39.59	+ 24	— 12	+ 5	23.32	+4	
	2		27.6990	13.6757	+ 56	—1.9	—3.1	40 42 18.05	— 5 54.30	— 34	— 69	—10	22.62	+3	71.1
	3		24.3733	18.8737	+ 56	— .8	—1.0	40 34 4.25	+ 2 19.03	+ 22	— 25	+ 3	23.28	+3	71.5
	4		18.9710	22.7753	+ 21	+ .1	— .2	40 34 46.80	+ 1 36.13	+ 17	— 1	+ 3	23.12	+3	71.1
	5		18.1367	23.1967	+ 20	+1.6	+1.3	40 34 15.15	+ 2 7.83	+ 20	+ 42	+ 3	23.63	+2	71.5
	6		19.2763	20.2073	0	— .7	—1.8	40 36 0.03	+ 23.52	+ 12	— 34	+ 1	23.34	+2	
	7		29.6537	10.6073	+ 15	—1.5	—2.4	40 28 21.49	+ 8 1.04	+ 12	— 54	+15	22.26	+1	
	8		33.4680iv	9.4613ii	+ 35	—1.1	— .5	40 26 15.40	+10 6.37	+1.49	— 24	+17	23.19	+1	
	9		27.1577	14.9573	+ 77	— .3	— .6	40 31 14.45	+ 5 8.31	+ 41	— 12	+ 8	23.13	+1	
July 30	10		14.2860	25.3617	— 13	—1.2	— .2	40 41 3.12	— 4 39.68	— 19	— 21	—11	22.93	0	71.0
	XI 1	R	29.1750	12.5573	+ 84	—1.0	— .9	40 43 23.47	— 6 59.89	+ 5	— 27	—15	23.21	+6	71.0
	2		8.6480ii	33.6710iv	+ 35	+ .2	— .8	40 46 56.87	—10 32.04	—1.34	— 7	—24	23.18	+5	70.6
	3		8.5100ii	32.9927iv	+ 20	+1.6	+2.3	40 26 2.91	+10 18.37	+1.50	+ 54	+18	23.50	+6	70.2
	4		8.1683ii	32.5057iv	+ 10	+ .9	— .2	40 26 7.48	+10 14.67	+1.49	+ 12	+18	23.94	+5	
	5		1.7590ii	33.9643iv	—154	— .4	—1.4	40 22 48.63	+13 32.96	+1.73	— 24	+25	23.33	+5	d
	6		26.1783	15.1010	+ 42	+ .8	— .6	40 31 42.60	+ 4 39.87	+ 39	+ 5	+10	23.01	+5	70.6
	7		19.5633	23.6267	+ 37	—1.4	— .9	40 38 6.16	— 1 42.71	— 6	— 33	— 3	23.03	+4	69.8d
	8		20.8550	18 8763	0	+ .1	— .3	40 37 12.65	— 49.97	0	— 2	— 1	22.65	+4	69.4
	I 1		18.1877	24.4820	+ 51	— .5	—1.1	40 33 43.81	+ 2 39.09	+ 24	— 22	+ 5	22.97	+4	
	3		18.1167	23.5973	+ 28	+ .7	— .1	40 34 4.51	+ 2 18.48	+ 22	+ 10	+ 3	23.34	+3	69.3
	4		23.7523	19.9503	+ 42	—1.5	—1.7	40 34 47.06	+ 1 36.12	+ 17	— 44	+ 3	22.94	+3	69.2
	5		22.5670	17.5067	0	—1.3	—1.2	40 34 15.41	+ 2 7.80	+ 20	— 36	+ 3	23.08	+2	68.4
	6		22.4543	21.5477	+ 13	— .8	— .4	40 36 0.27	+ 22.93	+ 12	— 18	+ 1	23.15	+2	
	7		11.1753	30.1920	+ 75	—1.9	—1.1	40 28 21.76	+ 8 0.46	+ 61	— 44	+15	22.54	+1	
	8		9.1843ii	33.1753iv	+ 28	+ .8	0	40 26 15.68	+10 5.97	+1.49	+ 12	+17	23.43	+1	69.0
	9		14.7110	26.8687	+ 57	+1.9	+ .5	40 31 14.91	+ 5 7.18	+ 41	+ 36	+ 8	22.94	+1	
Aug. 2	10		28.0510	17.0187	+165	+ .3	— .8	40 41 3.35	— 4 39.04	— 19	— 6	—11	23.95	0	68.4
	III 1	D	16.5610	24.6060	+ 29	— .4	— .9	40 39 47.02	— 3 23.26	— 17	— 18	— 5	23.36	—2	64.0
	2		5.4570ii	34.2923iv	— 6	—1.2	—2.9	40 24 13.97	+12 8.26	+1.63	— 56	+23	23.53	—3	63.9
	4		26.3873	14.9267	+ 44	—1.5	—2.5	40 41 13.31	— 4 49.56	— 27	— 55	— 8	22.85	—3	63.6a
	5		18.4930	22.2560	+ 10	—1.6	—1.1	40 37 58.45	— 1 35.07	— 4	— 39	— 3	22.92	—3	63.6

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer		l	r	Latitude	Δ	Ther.
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Aug. 2	III 6	D	26.5543	12.6377	— 34	+1.6	+1.3	40 42 15.31	— 5 51.39	— 27	+ 42	—14	40 36 23.93	—3	
	7		17.8777	23.5437	+ 24	—1.8	—1.2	40 38 47.05	— 2 23.16	— 10	— 44	— 4	23.31	—4	68.9
	8		25.8680	15.4217	+ 39	— .2	— .6	40 40 47.75	— 4 23.93	— 22	— 10	— 9	23.41	—4	
Aug. 5	10		9.9197ii	31.6797iv	+ 9	— .4	— .2	40 27 12.82	+ 9 9.59	+1.41	— 8	+15	23.89	—4	63.0
	XI 1	D	11.4640	28.1570	— 17	+2.0	+1.5	40 43 24.55	— 7 1.53	— 38	+ 50	—15	22.99	+6	77.2
	2		31.3603iv	6.2827ii	— 35	— .7	— .6	40 46 58.03	—10 33.22	—1.35	— 18	—24	23.04	+6	76.7
	3		32.4107iv	7.9827ii	+ 7	— .2	+ .3	40 26 4.32	+10 16.93	+1.50	+ 1	+18	22.94	+6	
	4		32.1407iv	7.8817ii	0	+1.2	+1.2	40 26 8.90	+10 12.65	+1.49	+ 34	+18	23.56	+6	
	5		33.7320iv	1.5953ii	—170	+1.2	+ .9	40 22 50.06	+13 31.15	+1.73	+ 30	+25	23.49	+6	76.6
	6		13.6207	24.6450	— 56	+1.1	+ .6	40 31 44.04	+ 4 38.27	+ 39	+ 24	+10	23.04	+5	76.4
	7		22.3360	18.2000	+ 8	— .8	—1.4	40 38 7.74	— 1 44.47	— 6	— 30	— 3	22.88	+5	76.1
	8		19.1957	21.2237	0	+ .2	+ .1	40 37 14.28	— 51.22	0	+ 4	— 1	23.09	+5	75.6
	I 1		23.0753	16.8753	— 0	+ .4	+1.1	40 33 45.49	+ 2 36.58	+ 24	+ 20	+ 5	22.56	+5	
	2		26.4900	12.3757	— 48	+ .7	— .5	40 42 20.01	— 5 56.32	— 34	+ 4	—10	23.29	+4	74.4
	4		23.0873	17.6680	+ 13	—2.0	—2.2	40 34 6.27	+ 2 16.89	+ 22	— 59	+ 3	22.82	+4	
	5		17.3923	22.3500	— 3	+ .6	0	40 34 17.24	+ 2 5.19	+ 20	+ 10	+ 3	22.76	+3	72.5
	6		19.1853	20.0000	— 3	+1.0	+ .6	40 36 1.93	+ 20.57	+ 11	+ 23	+ 1	22.85	+3	72.2
	7		29.5510	10.5887	+ 6	— .3	+ .1	40 28 23.55	+ 7 58.90	+ 61	— 3	+15	23.18	+2	
	8		32.0613iv	8.1520ii	+ 3	—1.0	+ .1	40 26 17.57	+10 3.82	+1.48	— 14	+17	22.90	+2	
	9		26.7967	14.7027	+ 54	0	— .1	40 31 16.82	+ 5 5.56	+ 41	— 2	+ 8	22.85	+2	71.9
	III 1	R	24.5013	16.4200	+ 21	—1.0	— .7	40 39 47.95	— 3 24.14	— 17	— 24	— 5	23.35	—2	69.9
	2		35.0467iv	6.2680ii	+ 32	—1.5	—1.9	40 24 14.89	+12 6.89	+1.63	— 47	+23	23.17	—2	69.9
	3		16.4270	27.2917	+120	—1.7	— .4	40 40 58.45	— 4 34.69	— 24	— 32	— 9	23.11	—2	70.0
	4		14.7147	26.2340	+ 31	+ .7	+ .8	40 41 14.16	— 4 51.00	— 27	+ 21	— 8	23.02	—3	
	6		13.6893	27.6243	+ 56	+ .3	+ .1	40 42 15.98	— 5 52.08	— 27	+ 6	—14	23.55	—3	69.6
	7		24.4313	18.7233	+ 53	+ .9	— .4	40 38 47.75	— 2 24.29	— 10	+ 9	— 4	23.41	—4	69.4
	8		16.4057	26.8343	+100	—1.9	—3.0	40 40 48.41	— 4 23.63	— 22	— 68	— 9	23.79	—4	69.1
	9		27.6457	15.9653	+128	— .7	— .5	40 31 27.98	+ 4 55.32	+ 43	— 18	+11	23.66	—3	
Aug. 6	10		31.4237iv	9.7290ii	+ 5	+2.4	+3.0	40 27 13.45	+ 9 7.91	+1.41	+ 75	+15	23.67	—4	69.5
	III 1	D	16.5560	24.6643	+ 29	+ .7	0	40 39 48.29	— 3 24.86	— 17	+ 11	— 5	23.32	—2	62.1
	2		5.3777ii	34.1657iv	— 10	—1.4	—2.7	40 24 15.19	+12 7.06	+1.63	— 56	+23	23.55	—2	
	3		24.8723	13.9550	— 36	+1.3	+ .6	40 40 58.27	— 4 35.65	— 24	+ 28	— 9	22.57	—2	62.4
	4		25.3673	13.8560	— 26	+ .8	—2.2	40 41 14.48	— 4 50.67	— 27	— 16	— 8	23.30	—3	
	5		18.1613	21.9530	0	—1.6	—2.0	40 37 59.51	— 1 35.77	— 4	— 50	— 3	23.17	—3	61.8
	6		25.2737	11.3160	—141	+ .2	— .9	40 42 16.25	— 5 52.17	— 27	— 8	—14	23.59	—3	61.6
	7		17.9700	23.6877	+ 31	—1.4	+ .3	40 38 48.05	— 2 24.49	— 10	— 18	— 4	23.24	—4	61.8
	8		24.0440	13.5720	— 75	— .7	—1.4	40 40 48.63	— 4 24.30	— 22	— 29	— 9	23.73	—3	
	9		13.0977	24.7897	— 72	—1.6	—1.6	40 31 28.21	+ 4 55.11	+ 43	— 46	+11	23.40	—3	
Aug. 7	10		9.5247ii	31.2427iv	+ 2	— .5	— .5	40 27 13.69	+ 9 8.53	+1.41	— 14	+15	23.64	—4	60.6
	XI 1	R	30.3157	13.6410	+194	+ .5	+ .6	40 43 24.88	— 7 1.61	— 38	+ 16	—15	22.90	+6	71.3
	2		8.8623ii	33.9490iv	+ 42	+ .2	— .4	40 46 58.38	—10 33.67	—1.35	— 2	—24	23.10	+6	69.8
	III 1	R	24.4190	16.3060	+ 17	—1.2	— .3	40 39 48.64	— 3 24.94	— 17	— 22	— 5	23.26	—2	65.6
	2		34.9620iv	6.2383ii	+ 31	— .2	— .5	40 24 15.52	+12 5.52	+1.63	— 10	+23	22.80	—2	
	3		14.2487	25.1440	— 22	— .9	— .6	40 40 59.09	— 4 35.12	— 24	— 22	— 9	23.42	—2	
	4		15.4563	26.9807	+ 84	—1.4	— .7	40 41 14.81	— 4 51.27	— 27	— 30	— 8	22.89	—3	65.9*a*
	5		23.6463	19.8433	+ 39	+1.0	+ .6	40 37 59.80	— 1 36.14	— 4	+ 23	— 3	23.82	—3	65.5
	6		14.6823	28.6247	+136	— .4	—1.5	40 42 16.51	— 5 52.46	— 27	— 25	—14	23.39	—3	65.4
	7		24.5287	18.7793	+ 60	+1.8	+ .9	40 38 48.34	— 2 25.36	— 10	+ 40	— 4	23.24	—3	65.2
	8		17.1127	27.5743	+147	— .9	— .9	40 40 48.89	— 4 24.59	— 22	— 26	— 9	23.73	—3	65.1
	9		27.4977	15.8487	+114	—1.3	—1.0	40 31 28.45	+ 4 54.49	+ 43	— 32	+11	23.16	—3	
Aug. 8	10		31.6247iv	9.9330ii	+ 8	+ .8	— .3	40 27 13.95	+ 9 7.86	+1.41	+ 8	+15	23.45	—4	65.1
	XI 1	R	30.7933	14.1450	+243	— .1	— .6	40 43 25.11	— 7 1.06	— 37	— 9	—15	23.44	+7	72.9
	2		9.5110ii	34.5940iv	+ 61	— .5	— .6	40 46 58.56	—10 33.62	—1.35	— 16	—24	23.19	+6	72.6
	3		8.1010ii	32.4773iv	+ 9	+1.8	+1.6	40 26 4.99	+10 15.64	+1.50	+ 48	+18	22.79	+7	
	4		9.0567ii	33.2963iv	+ 30	— .1	— .1	40 26 9.57	+10 12.24	+1.49	— 3	+18	23.45	+6	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
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Aug. 8	XI 5	R	2.8063ii	34.9377iv	− 82	−1.2	−1.6	40 22 50.75	+13 31.27	+1.73	− 39	+25	40 36 23.61	+6	72.6
	6		26.6167	15.6267	+ 72	−1.0	− .2	40 31 44.75	+ 4 37.74	+ 38	− 18	+10	22.79	+6	
	7		17.7910	21.9467	− 4	− .9	− .2	40 38 8.53	− 1 44.94	− 6	− 16	− 3	23.34	+8	72.1
	8		21.3000	19.2400	+ 3	− .3	− .9	40 37 15.10	− 52.03	0	− 16	− 1	22.90	+5	
	I 1		17.3513	23.5473	+ 17	− .3	− .3	40 33 46.36	+ 2 36.52	+ 24	− 8	+ 5	23.09	+5	71.9
	2		13.0433	27.1773	+ 10	−1.8	−1.5	40 42 20.89	− 5 56.98	− 34	− 47	−10	23.00	+5	71.1
	3		16.4687	21.8540	− 27	+ .5	− .7	40 34 7.18	+ 2 15.93	+ 21	− 1	+ 3	23.34	+4	71.1
	4		23.1763	19.4793	+ 29	− .2	−1.0	40 34 49.81	+ 1 33.44	+ 17	− 16	+ 3	23.29	+4	
	5		23.5447	18.6007	+ 33	−1.1	− .2	40 34 18.22	+ 2 4.96	+ 20	− 20	+ 3	23.21	+4	70.6
	6		22.4283	21.6233	+ 11	− .5	+ .4	40 36 2.83	+ 20.36	+ 11	− 3	+ 1	23.28	+3	
	7		12.0313	30.9313	+165	− .8	− .8	40 28 24.51	+ 7 57.74	+ 61	− 22	+15	23.79	+3	
	8		8.7127ii	32.6060iv	+ 18	+ .3	− .1	40 26 18.62	+10 3.47	+1.48	+ 3	+17	23.77	+3	
	9		15.1763	27.2170	+ 84	+ .4	+ .5	40 31 17.86	+ 5 4.30	+ 40	+ 12	+ 8	22.76	+2	70.4
	10		27.9623	16.8037	+156	+ .3	−1.0	40 41 5.84	− 4 42.21	− 19	− 8	−11	23.25	+1	70.6
	III 1	D	16.3133	24.4560	+ 20	+ .1	0	40 39 48.97	− 3 25.70	− 17	+ 2	− 5	23.07	−2	67.6
	2		5.2177ii	33.9693iv	− 22	+ .8	− .9	40 24 15.87	+12 6.09	+1.63	+ 1	+23	23.83	−2	
	3		24.9210	13.9800	− 35	− .1	− .4	40 40 59.42	− 4 36.24	− 24	− 6	− 9	22.79	−2	67.6
	4		26.1847	14.6630	+ 29	+ .4	−1.0	40 41 15.14	− 4 51.06	− 27	− 6	− 8	23.67	−2	*a*
	5		18.1897	22.0260	0	0	− .2	40 38 0.11	− 1 36.88	− 4	− 2	− 3	23.14	−3	67.1
	6		26.6877	12.7113	− 24	− .6	−1.0	40 42 16.79	− 5 52.92	− 27	− 22	−14	23.24	−3	66.9
	7		18 4830	24.2207	+ 48	−1.1	−1.7	40 38 48.64	− 2 25.03	− 10	− 38	− 4	23.09	−3	
	8		25.2720	14.7677	0	− .8	−2.4	40 40 49.16	− 4 25.30	− 22	− 43	− 9	23.12	−3	66.4
	9		13.9823	25.6340	− 10	−1.6	−1.4	40 31 28.70	+ 4 54.24	+ 43	− 43	+11	23.05	−3	
Aug. 9	10		8.6403ii	30.3320iv	− 5	− .8	− .3	40 27 14.21	+ 9 7.82	+1.41	− 16	+15	23.43	−4	66.4
	XI 1	D	10.7347	27.4667	− 90	+2.2	+2.3	40 43 25.15	− 7 2.32	− 38	+ 64	−15	22.94	+7	80.4
	2		30.8187iv	5.6843ii	− 52	+2.0	+ .7	40 46 58.70	−10 34.61	−1.35	+ 40	−24	22.90	+6	79.9
	3		34.0090iv	9.6100ii	+ 45	− .9	− .4	40 26 5.17	+10 16.28	+1.50	− 19	+18	22.94	+7	
	4		32.7307iv	8.4927ii	+ 15	− .5	+1.1	40 26 9.77	+10 12.13	+1.49	+ 6	+18	23.63	+6	
	5		33.1857iv	1.0607ii	−204	− .5	−1.1	40 22 50.95	+13 30.75	+1.73	− 22	+25	23.46	+6	79.0
	6		15.1957	26.1707	+ 44	+ .1	− .1	40 31 44.94	+ 4 37.27	+ 38	0	+10	22.69	+6	
	7		22.8833	18.6937	+ 20	+ .3	+ .3	40 38 8.75	− 1 45.85	− 6	+ 8	− 3	22.89	+8	78.8
	8		19.1467	21.2113	0	0	− .8	40 37 15.33	− 52.14	0	− 10	− 1	23.08	+5	77.9
	I 1		24.1800	18.0070	+ 41	− .4	+ .5	40 33 46.61	+ 2 35.99	+ 24	0	+ 5	22.89	+5	77.5
	2		27.5303	13.3793	+ 40	− .3	−1.2	40 42 21.15	− 5 57.46	− 34	− 20	−10	23.05	+5	
	3		23.5290	18.1490	+ 27	− .9	−1.3	40 34 7.46	+ 2 15.94	+ 21	− 30	+ 3	23.34	+4	76.9
	4		18.2177	21.9057	0	− .1	− .6	40 34 50.09	+ 1 33.14	+ 17	− 9	+ 3	23.34	+4	
	5		18.1157	23.0477	+ 17	+ .2	− .2	40 34 18.51	+ 2 4.59	+ 20	0	+ 3	23.33	+4	75.9
	6		19.2183	19.9983	− 3	+ .1	+ .8	40 36 3.11	+ 19.69	+ 11	+ 12	+ 1	23.01	+3	
	7		30.2430	11.3543	+ 89	−1.6	−3.4	40 28 24.81	+ 7 57.23	+ 61	− 68	+15	22.12	+3	
	8		32.5127iv	8.6520ii	+ 14	+ .3	+ .1	40 26 18.91	+10 2.60	+1.48	+ 6	+17	23.22	+3	
	9		26.7673	14.7080	+ 53	−1.0	−1.0	40 31 18.19	+ 5 4.68	+ 41	− 28	+ 8	23.08	+2	
	10		13.7227	24.9413	− 45	+ .6	+ .8	40 41 6.12	− 4 43.19	− 19	+ 20	−11	22.83	+2	75.2
	III 1	R	24.8070	16.6687	+ 35	−1.3	− .8	40 39 49.32	− 3 25.62	− 17	− 30	− 5	23.18	−2	69.4
	2		34.1380iv	5.4377ii	− 12	− .1	+ .5	40 24 16.10	+12 4.80	+1.63	+ 5	+23	22.81	−2	
	3		15.8340	26.7597	+ 84	− .6	+ .1	40 40 59.74	− 4 36.14	− 24	− 8	− 9	23.19	−2	70.5
	4		14.4440	25.9870	+ 13	−1.4	− .7	40 41 15.46	− 4 51.56	− 27	− 30	− 8	23.25	−2	69.9
	5		24.2580	20.4380	+ 54	− .1	− .4	40 38 0.40	− 1 36.61	− 4	− 6	− 3	23.66	−3	69.4
	6		14.4603	28.4113	+119	− .8	− .6	40 42 17.06	− 5 52.64	− 27	− 20	−13	23.82	−2	
	7		24.0773	18.3233	+ 41	− .3	− .5	40 38 48.93	− 2 25.42	− 10	− 11	− 4	23.26	−3	69.1
	8		16.7143	27.1973	+122	−1.0	− .4	40 40 49.43	− 4 25.06	− 23	− 20	− 9	23.85	−3	
	9		28.0047	16.3703	+149	−2.4	−2.3	40 31 28.96	+ 4 54.21	+ 43	− 66	+11	23.05	−3	*a*
Aug. 10	10		31.3503iv	9.6780ii	+ 6	− .6	−1.2	40 27 14.48	+ 9 7.35	+1.41	− 25	+15	23.14	−4	68.2
	III 1	D	15.7817	23.9450	− 6	+ .3	0	40 39 49.64	− 3 26.16	− 17	+ 4	− 5	23.30	−1	68.5
	2		5.3010ii	34.0187iv	− 19	−2.1	−2.4	40 24 16.51	+12 5.24	+1.63	− 63	+23	22.98	−2	
	3		23.5537	12.5730	−125	−1.6	−1.4	40 41 0.05	− 4 37.01	− 24	− 43	− 9	22.28	−2	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Aug. 10	III 4	D	25.4123	13.8623	— 26	+ .5	— .2	40 41 15.77	— 4 51.63	— 27	+ 6	— 8	40 36 23.85	—2	68.6
	5		17.6370	21.4950	— 12	— .6	—1.8	40 37 0.69	— 1 37.40	— 4	— 32	— 3	22.90	—2	
	6		26.0820	12.0740	— 77	+ .6	0	40 42 17.32	— 5 53.58	— 27	+ 10	—13	23.44	—2	67.3
	7		16.9730	22.7577	— 4	— .3	— .2	40 38 49.22	— 2 26.09	— 11	— 7	— 4	22.91	—3	67.4
	8		25.0627	14.5333	— 15	+ .4	+1.7	40 40 49.68	— 4 25.89	— 22	+ 28	— 9	23.76	—3	66.4
	9		13.1547	24.7840	— 71	— .3	— .2	40 31 29.20	+ 4 53.52	+ 43	— 7	+11	23.19	—3	
Sept. 2	10		9.0990ii	30.7503iv	0	+ .5	+ .3	40 27 14.74	+ 9 6.82	+1.41	+ 12	+15	23.24	—4	66.7
	XI 1		27.6593	10.8663	— 74	+ .7	+1.1	40 43 27.46	— 7 3.96	— 47	+ 25	—15	23.13	+8	63.6
	2		7.8240ii	32.9920iv	+ 14	—1.6	—2.0	40 47 1.43	—10 35.70	—1.29	— 50	—24	23.70	+8	62.3
	3		8.6353ii	32.9180iv	+ 19	— .8	— .7	40 26 8.74	+10 13.36	+1.43	— 22	+18	23.49	+9	c
	4		8.8027ii	32.9103iv	+ 21	—3.1	—1.8	40 26 13.42	+10 8.94	+1.42	— 71	+18	23.25	+8	
	5		2.7920ii	34.7710iv	— 86	—2.0	—2.2	40 22 54.76	+13 27.48	+1.70	— 59	+25	23.60	+8	60.8
	6		26.2943	15.4443	+ 55	—2.5	—2.3	40 31 48.99	+ 4 34.18	+ 44	— 68	+10	23.03	+8	60.4
	7		18.3147	22.6417	+ 14	—1.9	—1.7	40 38 13.26	— 1 49.32	— 8	— 51	— 3	23.32	+8	
	8		21.6213	19.3617	+ 6	— .4	— .6	40 37 20.18	— 57.08	— 2	— 14	— 1	22.93	+8	59.7
	I 1		16.9283	22.9300	— 4	—1.2	—1.7	40 33 51.65	+ 2 31.57	+ 26	— 40	+ 5	23.13	+8	59.4
	2		14.2320	28.5640	+118	—2.1	—2.3	40 42 26.40	— 6 2.28	— 42	— 62	—10	22.98	+8	59.1
	3		18.3327	23.5033	+ 28	—2.4	—3.5	40 34 13.03	+ 2 10.67	+ 23	— 82	+ 3	23.14	+7	
	4		23.7690	20.3000	+ 41	—2.8	—3.2	40 34 55.91	+ 1 27.72	+ 18	— 84	+ 3	23.00	+7	57.4
	5		23.3483	18.6450	+ 28	— .7	—1.8	40 34 24.56	+ 1 58.86	+ 22	— 34	+ 3	23.33	+7	
	6		23.0243	22.4393	+ 10	—2.0	— .3	40 36 8.65	+ 14.80	+ 11	— 35	0	23.21	+6	56.2
	7		11.9937	30.6513	+147	—1.6	—1.2	40 28 30.88	+ 7 51.61	+ 70	— 40	+15	22.94	+6	
	8		9.2293ii	32.8500iv	+ 22	— .5	—1.5	40 26 25.45	+ 9 56.65	+1.41	— 27	+17	23.41	+6	56.6
	9		14.4137	26.2100	+ 19	+ .1	— .8	40 31 24.89	+ 4 57.99	+ 46	— 8	+ 8	23.34	+6	
	10		26.5763	15.1940	+ 61	—1.1	—1.6	40 41 11.80	— 4 47.64	— 25	— 38	—11	23.42	+4	55.5
	IV 2	R	26.8983	15.5523	+ 80	+ .6	— .5	40 41 10.67	— 4 46.79	— 32	+ 3	— 8	23.51	—2	50.4c
	3		11.4077ii	30.9203iv	— 5	—1.6	—1.2	40 44 37.17	— 8 12.85	—1.12	— 40	—17	22.63	—2	50.6
	4		11.5263ii	30.0657iv	— 7	—1.4	+2.4	40 44 12.11	— 7 48.26	—1.11	+ 9	—14	22.69	—2	
	5		19.4910	23.6483	+ 38	+ .6	0	40 34 37.54	+ 1 45.11	+ 19	+ 10	+ 3	22.97	—3	50.4
	6		23.9867	16.8100	+ 16	+2.6	+1.4	40 39 23.82	— 3 1.31	— 19	+ 58	— 5	22.85	—3	50.8
	7		33.6890iv	8.2567ii	+ 32	— .2	+ .6	40 25 38.61	+10 42.46	+1.51	+ 4	+25	22.87	—2	
	8		28.1260	15.6943	+140	+2.6	+1.0	40 41 37.37	— 5 14.36	— 34	+ 53	—10	23.10	—3	50.0
	9		15.1400	28.0733	+123	+ .9	+2.3	40 30 56.13	+ 5 26.99	+ 50	+ 44	+10	24.16	—3	
Sept. 3	10		10.3690ii	31.8540iv	+ 10	+1.8	+ .7	40 27 18.80	+ 9 2.71	+1.34	+ 37	+17	23.39	—3	50.9
	XI 1	D	12.6183	29.4167	+100	+2.0	+1.9	40 43 27.53	— 7 4.53	— 47	+ 55	—15	22.93	+8	63.5
	2		31.3583iv	6.1143ii	— 39	+1 3	+1.6	40 47 1.49	—10 37.48	—1.29	+ 40	—24	22.88	+8	63.0
	5		32.9390iv	0.9913ii	—213	— .2	— .1	40 22 54.90	+13 26.35	+1.69	— 4	+25	23.15	+8	63.4
	6		14.1367	24.9697	— 29	+2.2	+1.9	40 31 49.04	+ 4 33.54	+ 43	+ 58	+10	23.69	+8	
	7		21.6707	17.2907	— 15	+1.7	+2 0	40 38 13.44	— 1 50.59	— 9	+ 52	— 3	23.25	+8	63.3
	8		18.9703	21.2353	+ 2	— .9	— .2	40 37 20.37	— 57.21	— 2	— 16	— 1	22.97	+8	63.2
	I 1		22.5243	16.5410	— 18	— .6	+1.2	40 33 51.85	+ 2 31.07	+ 26	+ 6	+ 5	23.29	+8	
	2		27.5733	13.2003	+ 32	+1.3	+ .1	40 42 26.61	— 6 3.10	— 42	+ 22	—10	23.21	+8	62.9
	3		23.4920	18.3630	+ 29	—1.6	— .2	40 34 13.26	+ 2 9.61	+ 23	— 28	+ 3	22.85	+7	63.3
	4		18.8203	22.2493	+ 13	+2.3	+1.3	40 34 56.16	+ 1 26.64	+ 18	+ 52	+ 3	23.53	+7	
	5		17.7293	22.4007	0	+2.7	+1.3	40 34 24.81	+ 1 57.99	+ 22	+ 58	+ 3	23.63	+7	62.9
	6		19.3687	19.9217	0	+1.4	0	40 36 8.89	+ 13.97	+ 11	+ 22	0	23.19	+6	
	7		29.0497	10.4003	— 31	—1.1	— .2	40 28 31.15	+ 7 50.94	+ 70	— 20	+15	22.74	+6	62.2
	8		32.7397iv	9.1403ii	+ 20	— .8	+1.5	40 26 25.74	+ 9 56.09	+1.40	+ 6	+17	23.46	+6	c
	9		26.5940	14.8123	+ 50	0	— .9	40 31 25.19	+ 4 57.69	+ 46	— 12	+ 8	23.30	+6	60.2
	10		14.3807	25.8050	+ 6	+1.0	+1.8	40 41 12.06	— 4 48.55	— 25	+ 38	—11	23.53	+4	60.4
	IV 1	D	21.5230	18.7480	0	— .2	— .4	40 35 13.45	+ 1 10.09	+ 17	— 8	+ 2	23.65	—3	58.2
	2		14.6943	26.0723	+ 25	0	+ .2	40 41 10.92	— 4 47.44	— 32	+ 2	— 8	23.10	—2	58.4
	4		29.4653iv	10.9557ii	0	— .2	0	40 44 12.33	— 7 47.51	—1.11	— 3	—14	23.54	—2	
	5		19.7220	15.5303	— 58	—2.0	— .2	40 34 37.74	+ 1 45.72	+ 19	— 34	+ 3	23.34	—3	58.1
	6		16.3787	23.5117	0	— .3	—1.6	40 39 24.01	— 3 0.16	— 19	— 25	— 5	23.36	—3	57.9

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Sept. 6	XI 1	D	28.8890	12.1347	+ 50	—1.5	—1.3	° ′ ″ 40 43 27.57	— 7 3.27	— 46	— 40	—15	° ′ ″ 40 36 23.29	+8	65.4
	2		8.4363ii	33.6057iv	+ 31	— .6	—1.4	40 47 1.67	—10 35.77	—1.29	— 28	—24	24.09	+8	64.4
	3		8.4357ii	32.6710iv	+ 15	+ .2	+2.6	40 26 9.11	+10 12.13	+1.43	+ 36	+18	23.21	+9	
	4		8.2987ii	32.3597iv	+ 9	0	— .1	40 26 13.81	+10 7.72	+1.42	— 2	+18	23.11	+9	63.8
	5		2.5320ii	34.4627iv	—106	— .3	— .5	40 22 55.19	+13 26.18	+1.69	— 11	+25	23.20	+8	
	6		26.0910	15.2710	+ 43	—1.2	—1.6	40 31 49.36	+ 4 33.38	+ 43	— 39	+10	22.88	+8	63.8
	7		19.2597	23.6260	+ 38	+ .1	+ .3	40 38 13.83	— 1 50.38	— 9	+ 6	— 3	23.39	+8	
	8		21.2337	18.9377	0	+1.3	+ .2	40 37 20.80	— 57.99	— 2	+ 22	— 1	23.00	+8	63.3
	I 1		15.9910	21.9413	+ 38	+ .2	+1.2	40 33 52.33	+ 2 30.38	+ 26	+ 18	+ 5	23.20	+8	62.9
	2		13.7580	28.1337	+ 78	—1.0	— .8	40 42 27.13	— 6 3.27	— 42	— 26	—10	23.08	+8	
	3		18.4583	23.5363	+ 33	+1.4	+1.4	40 34 13.83	+ 2 8.33	+ 23	+ 40	+ 3	22.82	+8	
	4		21.8943	18.4887	+ 4	— .9	— .1	40 34 56.79	+ 1 26.02	+ 17	— 16	+ 3	22.85	+7	63.1
	5		23.2667	18.6260	+ 29	+1.0	+1.6	40 34 25.47	+ 1 57.28	+ 22	+ 36	+ 3	23.36	+7	62.6
	6		22.5537	22.0213	+ 8	— .8	0	40 36 9.51	+ 13.47	+ 11	— 12	+ 1	22.98	+6	
	7		10.9490	29.5427	+ 26	+2.2	+1.6	40 28 31.43	+ 7 49.68	+ 70	+ 54	+15	22.50	+6	62.4
	8		8.4287ii	31.9767iv	+ 4	+2.1	+1.7	40 26 26.49	+ 9 54.75	+1.40	+ 54	+17	23.35	+6	
	9		14.6147	26.3483	+ 32	+2.8	+1.3	40 31 25.97	+ 4 56.43	+ 46	+ 60	+ 8	23.54	+6	62.6
Sept. 8	10		28.2557	16.8177	+172	+2.1	+1.5	40 41 12.76	— 4 49.31	— 26	+ 52	—11	23.60	+5	62.4
	XI 1	D	12.6487	29.4080	+100	— .3	—1.6	40 43 27.60	— 7 3.54	— 46	— 25	—15	23.20	+8	64.3
	2		30.1987iv	4.9540ii	— 74	0	— .6	40 47 1.70	—10 37.42	—1.29	— 8	—24	22.67	+8	62.5
	3		32.6833iv	8.4307ii	+ 16	—2.2	—3.2	40 26 9.18	+10 12.58	+1.43	— 75	+18	22.62	+9	
	4		32.0707iv	7.9843ii	0	—1.7	—1.6	40 26 13.92	+10 8.35	+1.42	— 47	+18	23.40	+9	
	6		12.6573	23.4973	—123	—1.1	—1.6	40 31 49.48	+ 4 33.47	+ 42	— 38	+10	23.09	+8	61.6
	7		21.4173	17.0377	— 21	— .1	— .6	40 38 13.82	— 1 50.56	— 9	— 9	— 3	23.05	+9	60.9
	8		18.8157	21.1060	0	— .5	— .7	40 37 21.01	— 57.84	— 2	— 17	— 1	22.97	+8	61.6
	I 1		23.1190	17.1630	+ 5	—1.0	— .8	40 33 52.56	+ 2 30.44	+ 26	— 26	+ 5	23.05	+8	61.5
	2		27.8447	13.4597	+ 55	— .4	—2.0	40 42 27.39	— 6 3.46	— 42	— 32	—10	23.09	+8	
	3		22.3217	17.2070	— 8	—1 4	— .8	40 34 14.12	+ 2 9.17	+ 23	— 32	+ 3	23.23	+8	61.5
	4		18.5693	21.9983	+ 5	— .8	—1.7	40 34 57.09	+ 1 26.62	+ 18	— 34	+ 3	23.58	+8	
	5		17.2563	21.9003	— 14	0	—1.1	40 34 25.81	+ 1 57.26	+ 22	— 14	+ 3	23.18	+7	60.4
	6		19.9607	20.4937	0	— .3	— .6	40 36 9.82	+ 13.46	+ 11	— 12	0	23.27	+6	59.9
	7		28 5050	9.8603	— 90	—2.1	—2.9	40 28 32.21	+ 7 50.68	+ 70	— 70	+15	23.04	+6	
	8		31.1760iv	7.6163ii	— 15	+1.1	+1.9	40 26 26.89	+ 9 55.00	+1.40	+ 41	+17	23.87	+6	
	9		25.3557	13.6113	— 36	—1.5	—1.0	40 31 26.39	+ 4 56.54	+ 45	— 36	+ 8	23.10	+6	59.9
	10		14.1667	25.6517	— 6	— .9	— .3	40 41 13.13	— 4 50.06	— 26	— 18	—11	22.52	+5	59.1
	IV 1	D	22.9080	20.1960	+ 24	—1.6	—1.0	40 35 14.72	+ 1 8.56	+ 17	— 38	+ 2	23.09	—1	54.9
	2		14.6573	26.0693	+ 25	—1.0	— .8	40 41 12.21	— 4 48.31	— 32	— 26	— 8	23.24	—1	
	3		27.9647iv	8.4097ii	+ 4	+1.0	— .4	40 44 38.56	— 8 13.93	—1.12	+ 10	—17	23.44	—2	54.9
	4		29.3190iv	10.7610ii	0	— .4	—1.7	40 44 13.08	— 7 48.74	—1.11	— 28	—14	22.81	—2	54.8
	5		19.9633	15.8183	— 52	—3.2	—2.0	40 34 38.84	+ 1 44.56	+ 19	— 75	+ 3	22.87	—2	
	6		16.3757	23.5773	0	— .2	— .1	40 39 25.06	— 3 1.90	— 19	— 4	— 5	22.88	—2	
	7		3.8607ii	29.2927iv	—110	— .4	— .1	40 25 39.66	+10 42.09	+1.51	— 8	+25	23.43	—2	53.9*d*
	8		12.2633	24.7083	—111	— .8	—1.5	40 41 38.35	— 5 14.06	— 34	— 32	—10	23.53	—3	53.7
	9		25.3760	12.4683	— 81	+ .5	+1.6	40 30 57.04	+ 5 25.82	+ 50	+ 28	+10	23.74	—3	
	10		30.6280iv	9.1747ii	0	— .1	+ .3	40 27 19.62	+ 9 1.86	+1.34	+ 2	+17	23.01	—3	53.9
Sept. 9	XI 1	R	28.0157	11.2607	— 36	— .9	—1.4	40 43 27.59	— 7 3.08	— 46	— 32	—15	23.58	+8	63.0
	2		8.5160ii	33.7183iv	+ 34	— .6	— .6	40 47 1.72	—10 36.61	—1.29	— 17	—24	23.41	+8	62.9
	3		9.2330ii	33.4823iv	+ 34	+2.4	+ .7	40 26 9.22	+10 11.94	+1.43	+ 46	+18	23.23	+9	
	4		8.2990ii	32.3667iv	+ 9	+ .7	— .1	40 26 13.94	+10 7.89	+1.42	+ 10	+18	23.53	+9	
	5		2.5460ii	34.4813iv	—105	+ .6	— .1	40 22 55.35	+13 26.30	+1.70	+ 8	+25	23.68	+9	62.4
	6		26.3983	15.5910	+ 64	—1.0	— .7	40 31 49.55	+ 4 33.11	+ 43	— 24	+10	22.95	+8	62.4
	7		18.4823	22.8727	+ 18	+ .5	+ .7	40 38 14.09	— 1 50.94	— 9	+ 16	— 3	23.19	+9	62.3
	8		21.7920	19.4833	+ 8	+2.1	+ .9	40 37 21.10	— 58.33	— 2	+ 44	— 1	23.18	+8	
	I 1		17.8630	23.7893	+ 29	+ .2	+ .9	40 33 52.67	+ 2 29.75	+ 26	+ 14	+ 5	22.87	+8	
	2		13.4840	27.8850	+ 57	+ .2	+ .6	40 42 27.50	— 6 3.86	— 43	+ 10	—10	23.21	+8	63.4

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.	
								° ′ ″					° ′ ″			
Sept. 9	I 3	R	18.3623	23.4500	+ 28	+1.4	+2.4	40 34 14.25	+ 2 8 56	+ 23	+ 52	+ 3	40 36 23.59	+8	62.8	
	4		23.0733	19.6947	+ 27	—1.3	+ .7	40 34 57.14	+ 1 25.40	+ 17	— 11	+ 3	22.63	+8	62.8	
	5		23.1487	18.5340	+ 25	—1.0	+ .4	40 34 25.97	+ 1 56.61	+ 21	— 10	+ 3	22.72	+7		
	6		20.8577	20.3567	0	0	+ .4	40 36 9.98	+ 12.66	+ 11	+ 5	0	22.80	+6	62.5	
	7		11.0243	29.6050	+ 34	+ .7	0	40 28 32.38	+ 7 49.37	+ 69	+ 11	+15	22.70	+7		
	8		9.0907ii	32.6250iv	+ 18	+ .9	— .1	40 26 27.08	+ 9 54.43	+1.40	+ 12	+17	23.20	+7		
Sept. 12	9		14.4227	26.1293	+ 19	+1.3	+ .4	40 31 26.59	+ 4 55.71	+ 45	+ 25	+ 8	23.08	+6	62.4	
	XI 2	D	32.0857iv	6.8653ii	— 18	—1.1	— .7	40 47 1.83	—10 36.93	—1.29	— 26	—24	23.11	+8	61.6	
	3		32.5263iv	8.2943ii	+ 12	+ .1	—1.7	40 26 9.40	+10 12.04	+1.43	— 20	+18	22.85	+9		
	5		32.1820iv	0.2533ii	—266	+ .6	+ .4	40 22 55.57	+13 25.74	+1.69	+ 14	+25	23.39	+9	61.9	
	6		14.1950	24.9920	— 26	— .7	—1.3	40 31 49.79	+ 4 32.63	+ 43	— 28	+10	22.67	+9		
	7		22.0317	17.6343	— 6	+ .4	— .2	40 38 14.38	— 1 51.05	— 9	+ 4	— 3	23.25	+9	62.2	
	8		18.9220	21.2023	0	—2.1	—2.5	40 37 21.44	— 57.59	— 2	— 64	— 1	23.18	+9		
	I 1		23.6637	16.7403	— 11	— .8	— .3	40 33 53.04	+ 2 29.58	+ 26	— 16	+ 5	22.77	+9	61.9	
	2		27.7100	13.3073	+ 42	— .6	—2.0	40 42 27.50	— 6 3.87	— 43	— 35	—10	22.75	+8		
	3		22.8937	17.8213	+ 12	— .5	0	40 34 14.69	+ 2 8.14	+ 23	— 8	+ 3	23.01	+8	61.9	
	4		18.9493	22.3440	+ 12	— .4	—1.1	40 34 57.72	+ 1 25.77	+ 17	— 20	+ 3	23.49	+8		
	5		18.2340	22.8683	+ 15	— .2	—1.1	40 34 26.47	+ 1 57.09	+ 22	— 17	+ 3	23.64	+9		
	6		19.4577	19.9667	0	—1.6	— .2	40 36 10.45	+ 12.86	+ 11	— 28	+ 1	23.15	+7	60.9	
	7		29.2500	10.6443	— 8	—1.7	—2.5	40 28 32.91	+ 7 49.89	+ 70	— 58	+15	23.07	+7		
Sept. 16	8		32.3317iv	8.8140ii	+ 12	— .8	—1.0	40 26 27.67	+ 9 54.01	+1.40	— 25	+17	23.00	+7	60.9	
	XI 2	R	7.9217ii	33.1220iv	+ 17	— .3	— .9	40 47 2.07	—10 36.51	—1.29	— 16	—24	23.87	+8	64.4	
	3		9.2383ii	33.4533iv	+ 32	+ .3	— .1	40 26 9 72	+10 11.66	+1.43	+ 3	+18	23.02	+9	63.9	
	4		9.2603ii	33.3207iv	+ 31	—1.7	—1.3	40 26 14.49	+10 7.76	+1.42	— 43	+18	23.42	+9		
	5		1.8200ii	33.7447iv	—156	— .8	—2.0	40 22 55.96	+13 25.90	+1.69	— 38	+25	23.42	+9	63.9	
	6		25.7473	14.9530	+ 22	—1.6	—1.8	40 31 50.21	+ 4 32.68	+ 43	— 48	+10	22.94	+9		
	7		19.3787	23.7870	+ 41	— .7	+ .3	40 38 14.91	— 1 51.45	— 9	— 7	— 3	23.27	+9		
	8		22.5163	20.2080	+ 18	— .5	—1.8	40 37 22.00	— 58.34	— 2	— 30	— 1	23.33	+9		*a*
	I 1		17.7633	23.6637	+ 24	— .3	0	40 33 53.64	+ 2 29.08	+ 26	— 4	+ 5	22.99	+9	62.6	
	2		13.1730	27.6187	+ 35	— .2	—1.7	40 42 28.56	— 6 4.93	— 43	— 24	—10	22.86	+9	62.1	
	3		18.5827	23.6423	+ 34	— .9	— .5	40 34 15.41	+ 2 7.87	+ 23	— 20	+ 3	23.34	+8		
	4		22.3640	19.0067	+ 14	0	—1.0	40 34 58.47	+ 1 24.83	+ 17	— 12	+ 3	23.38	+8	61.9	
Sept. 17	5		22.6987	18.0997	+ 12	—1.4	—1.0	40 34 27.28	+ 1 56.18	+ 21	— 34	+ 3	23.36	+8	61.6	
	IV 2	R	26.0597	14.5750	+ 22	+1.3	+ .4	40 41 14.09	— 4 50.14	— 33	+ 25	— 8	23.79	0	55.4	
	3		11.6017ii	31.2463iv	— 4	— .7	— .2	40 44 40.20	— 8 16.17	—1.12	— 14	—17	22.60	—1	55.4	*d*
	4		11.0313ii	29.6633iv	0	— .7	+ .3	40 44 15.14	— 7 50.61	—1.12	— 7	—14	23.20	—1		
	5		20.5997	24.6303	+ 62	+2.1	+1.6	40 34 40.39	+ 1 41.96	+ 19	+ 53	+ 3	23.10	—2	54.4	
	6		24.5557	17.2960	+ 38	+ .8	+ .3	40 39 26.54	— 3 3.46	— 19	+ 16	— 5	23.00	—2		
	7		33.7780iv	8.4283ii	+ 35	—1.4	—1.3	40 25 40.85	+10 40.36	+1.51	— 38	+25	22.59	—2	54.1	
	8		27.9110	15.4243	+121	+2.0	+ .6	40 41 39.46	— 5 15.70	— 34	+ 38	—10	23.70	—2		
Sept. 19	IV 1	D	20.6383	18.0257	— 10	+ .2	0	40 35 17.08	+ 1 5.96	+ 17	+ 3	+ 2	23.26	0	67.1	
	2		12.9167	24.4630	— 89	+ .7	+ .5	40 41 14.63	— 4 51.39	— 33	+ 18	— 8	23.01	0	66.7	
	3		30.7853iv	11.1400ii	0	— .1	+ .2	40 44 40.67	— 8 16.15	—1.12	+ 1	—17	23.24	—1		
	4		29.9403iv	11.2840ii	— 5	+ .2	+ .3	40 44 15.61	— 7 51.17	—1.12	+ 7	—14	23.25	—1		
	5		22.5953	18.5607	+ 15	— .9	+ .2	40 34 40.84	+ 1 41.93	+ 19	— 12	+ 3	22.87	—1	66.6	
	7		4.8510ii	30.2013iv	— 77	— .1	0	40 25 41.21	+10 40.05	+1.51	— 2	+25	23.00	—2	66.0	
Sept. 20	8		13.2157	25.7837	— 37	+1.3	+1.7	40 41 39.81	— 5 17.32	— 34	+ 42	—10	22.47	—2	66.2	
	IV 1	R	19.5463	22.1737	+ 13	—1.7	—2.3	40 35 17.34	+ 1 6.39	+ 17	— 56	+ 2	23.36	0	57.6	
	2		26.7037	15.1987	+ 64	+ .2	+1.0	40 41 14.63	— 4 50.74	— 33	+ 16	— 8	23.64	0		
	3		11.1380ii	30.7670iv	0	—1.8	—1.2	40 44 40.91	— 8 15.78	—1.12	— 44	—17	23.40	—1	58.8	
	4		11.2947ii	29 9447iv	— 6	—3.6	— .6	40 44 15.84	— 7 51.04	—1.12	— 64	—14	22.90	—1		
	5		23.2503	27.2463	+125	+1.2	+ .1	40 34 41.07	+ 1 41.24	+ 19	+ 20	+ 3	22.73	—1	57.4	
	6		24.1447	16.9260	+ 23	—1.2	—1.5	40 39 27.19	— 3 2.38	— 19	— 38	— 5	24.19	—1		
	7		32.5473iv	7.2057ii	— 4	—1.9	— .8	40 25 41.40	+10 40.05	+1.51	— 40	+25	22.81	—1		
	8		28.2203	15.7377	+144	— .3	—1.0	40 41 39.99	— 5 15.64	— 34	— 17	—10	23.74	—2	56.6	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Sept.								° ′ ″					° ′ ″		
20	IV 9	R	14.7240	27.5737	+ 89	+ .2	— .6	40 30 58.54	+ 5 24.77	+ 50	— 4	+10	40 36 23.87	—2	
	10		10.0707ii	31.4963iv	+ 7	+1.1	— .5	40 27 20.95	+ 9 1.17	+1.34	+ 10	+17	23.73	—2	56.6
	V 1		28.5160	12.6090	+ 51	—3.2	— .2	40 29 40.24	+ 6 41.90	+ 60	— 52	+11	22.33	—2	56.6
	2		18.6530	23.2260	+ 26	— .1	0	40 38 18.93	— 1 55.57	— 9	— 2	— 3	23.22	—3	56.7
	3		10.3907ii	33.9510iv	+ 46	— .8	— .3	40 26 26.29	+ 9 55.19	+1.47	— 16	+23	23.02	—2	*d*
	4		14.7700	29.2033	+167	—1.3	—1.4	40 42 29.32	— 6 4.97	— 42	— 38	—11	23.44	—3	
	5		33.3567iv	9.8037ii	+ 34	—2.9	— .2	40 26 27.25	+ 9 54.98	+1.42	— 48	+19	23.36	—3	55.5
	6		23.0443	22.0013	+ 17	+ .7	— .3	40 36 49.68	— 26.39	+ 9	+ 7	— 1	23.44	—3	
Sept.	7		13.6143	28.4457	+ 89	—2.0	+ .5	40 42 38.86	— 6 14.83	— 42	— 24	—12	23.25	—3	
21	IV 1	D	21.2007	18.5860	0	— .7	—1.3	40 35 17.58	+ 1 6.05	+ 17	— 28	+ 2	23.54	0	52.6
	2		13.7667	25.2983	— 32	—2.0	—2.2	40 41 15.13	— 4 51.19	— 33	— 59	— 8	22.94	0	
	3		28.8543iv	9.1810ii	0	—1.3	—1.5	40 44 41.13	— 8 16.91	—1.12	— 39	—17	22.54	0	52.4
	4		30.1463iv	11.4957ii	— 7	— .6	—1.3	40 44 16.07	— 7 51.07	—1.12	— 26	—14	23.48	—1	52.2
	5		22.5713	18.5397	+ 13	—1.2	— .5	40 34 41.28	+ 1 41.86	+ 19	— 25	+ 3	23.11	—1	
	6		17.8233	25.0887	+ 62	—1.7	—1.1	40 39 27.41	— 3 3.67	— 19	— 40	— 5	23.10	—1	51.8
	8		12.7937	25.3140	— 69	— .7	— .4	40 41 40.16	— 5 16.06	— 34	— 16	—10	23.50	—2	51.9
	9		26.7080	13.8717	+ 23	—1.9	— .7	40 30 58.71	+ 5 24.28	+ 50	— 38	+10	23.21	—2	
	10		30.5980iv	9.1870ii	0	— .4	— .3	40 27 21.11	+ 9 0.81	+1.34	— 10	+17	23.33	—2	
	V 1		11.9567	27.8633	— 8	+ .6	— .1	40 29 40.38	+ 6 41.76	+ 60	+ 8	+11	22.93	—2	51.3
	2		23.8790	19.2703	+ 43	+1.6	+1.6	40 38 19.11	— 1 56.51	— 9	+ 46	— 3	22.94	—3	
Sept.	3		31.1553iv	7.5743ii	— 15	—1.4	0	40 26 26.40	+ 9 55.58	+1.47	— 22	+23	23.46	—2	
22	IV 1	R	19.3177	21.8973	+ 9	— .8	+1.7	40 35 17.72	+ 1 5.17	+ 17	+ 9	+ 2	23.17	0	56.5
	2		26.6190	15.0837	+ 58	+ .7	—1.4	40 41 15.58	— 4 51.50	— 33	— 7	— 8	23.60	0	
	3		12.2370ii	31.9300iv	— 4	— .8	— .8	40 44 41.53	— 8 17.39	—1.05	— 22	—17	22.70	0	56.4
	4		11.2080ii	29.9270iv	— 6	+1.0	+1.0	40 44 16.48	— 7 52.78	—1.05	+ 28	—14	22.79	—1	55.6
	5		18.8803	22.8993	+ 21	+1.2	— .2	40 34 41.69	+ 1 41.56	+ 19	+ 16	+ 3	23.63	—1	
	6		25.3697	18.0827	+ 77	— .4	0	40 39 27.79	— 3 4.25	— 20	— 6	— 5	23.23	—1	
	7		34.6610iv	9.3477ii	+ 63	—1.0	— .9	40 25 41.91	+10 39.52	+1.43	— 27	+25	22.84	—1	56.2
	8		27.6550	15.1517	+105	—1.0	—1.0	40 41 40.48	— 5 16.07	— 34	— 28	—10	23.69	—2	56.0
	9		14.7143	27.5057	+ 82	+2.0	+ .6	40 30 59.01	+ 5 23.28	+ 50	+ 38	+10	23.27	—2	
	10		11.9420ii	33.3263iv	+ 24	+ .8	— .2	40 27 21.39	+ 9 0.18	+1.27	+ 10	+17	23.11	—2	
	V 1		29.7400	13.8513	+166	—3.1	—1.6	40 29 40.67	+ 6 41.73	+ 60	— 68	+11	22.43	—2	
	2		18.7050	23.3033	+ 28	0	— .4	40 38 19.30	— 1 56.21	— 9	— 5	— 3	22.92	—2	55.1
	4		27.0210	12.5483	— 21	+ .2	— .4	40 42 29.61	— 6 5.49	— 42	— 2	—11	23.57	—3	55.2
	5		7.0733ii	30.6263iv	— 24	+ .7	+ .7	40 26 27.52	+ 9 54.83	+1.35	+ 20	+19	24.09	—3	
	6		18.8070	19.8743	— 5	—1.1	— .7	40 36 49.89	— 26.95	+ 9	— 26	— 1	22.76	—2	55.0
	7		27.9570	13.0867	+ 45	+1.7	+ .7	40 42 39.04	— 6 15.70	— 42	+ 36	—12	23.16	—3	
Sept.	8		22.7237	18.1943	+ 12	— .7	— .4	40 34 28.46	+ 1 54.43	+ 23	— 16	+ 4	23.00	—3	
27	I 2	D	27.7683	13.3067	+ 46	— .1	— .8	40 42 29.56	— 6 5.40	— 49	— 12	—10	23.45	+9	50.2
	3		23.7950	18.8000	+ 39	— .7	— .2	40 34 16.59	+ 2 6.27	+ 25	— 14	+ 3	23.00	+9	
	4		19.5550	22.8560	+ 23	+1.3	— .1	40 34 59.81	+ 1 23.44	+ 19	+ 18	+ 3	23.65	+9	49.6
	5		17.8337	22.3470	0	+ .8	+ .5	40 34 28.76	+ 1 54.00	+ 23	+ 19	+ 3	23.21	+9	50.0
	6		19.7210	20.1470	0	— .1	—1.9	40 36 12.64	+ 10.76	+ 11	— 26	0	23 25	+8	
	7		29.7663	11.3113	+ 58	—1.0	— .1	40 28 35.41	+ 7 46.30	+ 77	— 17	+15	22.46	+8	
	8		32.3770iv	8.9697ii	+ 15	+1 4	+1.2	40 26 30.42	+ 9 51.28	+1.37	+ 37	+17	23.61	+8	50.2
	9		25.6093	14.0153	— 14	— .1	— .4	40 31 30.10	+ 4 52.82	+ 50	— 6	+ 8	23.44	+8	
	10		13.9743	25.5833	— 12	—1.2	— .4	40 41 16.43	— 4 53.20	— 31	— 24	—13	22.55	+6	49.6
	II 2		19.1243	19.9077	— 3	+ .6	+ .5	40 36 42.38	— 19.78	+ 7	+ 16	0	22.83	+6	48.4
	4		22.0410	17.2523	— 13	+ .7	— .8	40 38 24.04	— 2 0.93	— 8	+ 1	— 3	23.01	+6	*a*
	5		11.7290ii	29.0023iv	— 6	— .5	— .4	40 29 5.50	+ 7 16.29	+1.13	— 12	+12	22.92	+6	48.2*a*
	6		30.2797iv	10.5453ii	0	—1.0	— .1	40 28 3.58	+ 8 18.48	+1.22	— 17	+14	23.25	+6	
	7		13.0347ii	28.4167iv	— 20	+ .5	—1.3	40 29 53.85	+ 6 28.48	+1.05	— 9	+11	23.40	+6	
	8		27.0200	11.4127	— 74	+1.4	— .3	40 42 58.19	— 6 34.04	— 52	+ 18	—11	23.70	+5	
Sept.	9		17.6263	20.5270	— 16	— .2	+1.1	40 37 35.99	— 1 13.23	+ 1	+ 11	— 2	22.86	+4	48.3
28	I 12		13.4670	27.9367	+ 59	+1.1	+ .7	40 42 29.67	— 6 5.63	— 49	+ 26	—10	23.71	+9	51.9

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Sept. 28	I 3	D	19.5267	24.5493	+ 60	—2.2	—2.4	40 34 16.72	+ 2 7.01	+ 25	— 64	+ 3	40 36 23.37	+8	51.5
	4		23.0000	19.6937	+ 26	—2.8	—2.2	40 34 59.95	+ 1 23.58	+ 19	— 72	+ 3	23.03	+8	
	5		21.8747	17.3313	— 12	—1.9	— .9	40 34 28.92	+ 1 54.73	+ 23	— 41	+ 3	23.50	+9	
	6		22.1217	21.7373	+ 6	+1.7	+1.9	40 36 12.78	+ 9.72	+ 10	+ 50	0	23.10	+8	51.2
	7		11.5767	30.0217	+ 85	+ .8	+ .3	40 28 35.58	+ 7 46.11	+ 77	+ 16	+15	22.77	+8	
	8		9.3980ii	32.8053iv	+ 22	+1.2	— .3	40 26 30.61	+ 9 51.29	+1.37	+ 14	+17	23.58	+8	51.1
	10		27.5210	15.9350	+118	+ .1	+ .1	40 41 16.61	— 4 52.95	— 31	+ 3	—13	23.25	+6	
	II 1		18.2543	19.5707	— 7	— .6	— .3	40 36 56.49	— 33.23	+ 8	— 14	— 1	23.19	+6	
	2		20.8690	20.0917	+ 3	+1.1	+1.5	40 36 42.59	— 19.64	+ 7	+ 36	0	23.38	+6	
	4		19.1540	23.9600	+ 44	— .2	— .5	40 38 24.26	— 2 1.50	— 8	— 10	— 3	22.55	+6	50.4
	5		28.9383iv	11.6770ii	— 6	—2.4	— .8	40 29 5.75	+ 7 15.98	+1.13	— 47	+12	22.51	+6	
	6		10.4350ii	30.1353iv	0	+2.5	+2.5	40 28 3.83	+ 8 17 60	+1.22	+ 70	+14	23.49	+6	49.3
Sept. 29	7		28.6610v	13.3170ii	— 28	+ .6	0	40 29 54.10	+ 6 27.49	+1.05	+ 10	+11	22.85	+6	50.1
	I 2	D	27.5997	13.0967	+ 31	+3.1	+2.3	40 42 29.79	— 6 6.41	— 49	+ 78	—10	23.57	+9	51.8*b*
	3		23.7487	18.7777	+ 40	+ .3	+ .9	40 34 16.85	+ 2 5.67	+ 25	+ 16	+ 3	22.96	+9	
	4		19.4387	22.7133	+ 20	+1.6	+ .1	40 35 0.10	+ 1 22.77	+ 18	+ 26	+ 3	23.34	+9	51.5
	5		18.1453	22.6570	+ 13	+ .2	— .9	40 34 29.08	+ 1 54.00	+ 23	— 8	+ 3	23.26	+9	
	6		18.4407	18.8223	— 4	+1.1	— .1	40 36 12.95	+ 9.63	+ 10	+ 16	0	22.84	+8	51.1
	7		30.1383	11.7117	+100	+ .5	+1.0	40 28 35.76	+ 7 45.69	+ 77	+ 20	+15	22.57	+8	
	8		32.3193iv	8.9670ii	+ 13	+1.1	+3.4	40 26 30.81	+ 9 49.88	+1.36	+ 60	+17	22.82	+8	50.4
	9		25.9837	14.4420	+ 13	+1.6	+1.4	40 31 30.51	+ 4 51.56	+ 50	+ 43	+18	23.18	+8	
	10		13.1683	24.8223	— 70	+ .4	+ .8	40 41 16.83	— 4 54.19	— 31	+ 16	—13	22.36	+6	50.1
	II 1		20.4793	19.1573	0	—1.4	—2.0	40 36 56.59	— 33.39	+ 8	— 47	— 1	22.80	+6	
	2		18.6597	19.4523	— 3	— .4	+ .3	40 36 42.80	— 20.01	+ 7	— 2	— 1	22.83	+6	
	3		10.8613	27.5967	— 75	+ .9	0	40 29 19.60	+ 7 2.52	+ 70	+ 14	+13	23.09	+7	49.5
	4		22.5390	17.7097	0	+ .6	— .2	40 38 24.49	— 2 1.99	— 8	+ 7	— 3	22.46	+6	49.6
	5		11.3097ii	28.5583iv	0	+2.3	+ .8	40 29 6.01	+ 7 15.67	+1.13	+ 46	+12	23.39	+6	
	6		31.6503iv	11.9567ii	— 3	— .4	+1.4	40 28 4.10	+ 8 17.43	+1.22	+ 12	+14	23.01	+6	49.1
	7		14.1757ii	29.5133iv	— 51	+1.3	+ .8	40 29 54.38	+ 6 27.28	+1.05	+ 30	+11	23.12	+6	
	8		28.3907	12.7603	+ 52	+1.7	+ .2	40 42 58.71	— 6 34.94	— 52	+ 29	—11	23.43	+5	
	9		19.6037	22.5100	+ 17	— .2	+ .7	40 37 36.47	— 1 13.46	+ 1	+ 6	— 2	23.06	+4	49.1
	V 1	R	28.6147	12.7603	+ 64	+ .7	+ .4	40 29 41.25	+ 6 40.64	+ 66	+ 16	+11	22.82	—2	45.7
	2		18.9317	23.5413	+ 34	+ .8	— .3	40 38 19.77	— 1 56.52	— 11	+ 8	— 3	23.19	—2	45.6
	3		9.9040ii	33.4557iv	+ 36	— .6	+ .2	40 26 26.90	+ 9 55.00	+1.44	— 7	+24	23.51	—2	
	4		13.2317	27.7237	+ 41	—2.1	— .2	40 42 29.95	— 6 6.17	— 48	— 35	—11	22.84	—2	
	5		32.1460iv	8.5583ii	+ 8	—2.4	—1.6	40 26 27.75	+ 9 55.84	+1.18	— 58	+19	24.38	—2	44.6*
	6		22.3390	21.2967	+ 11	0	— .9	40 36 49.99	— 26.36	+ 9	— 12	— 1	23.59	—2	
	7		14.6293	29.4640	+178	—1.8	— .4	40 42 39.10	— 6 15.17	— 48	— 33	—12	23.00	—3	44.8
	8		18.5677	23.0987	+ 25	— .3	— .4	40 34 28.43	+ 1 54.51	+ 25	— 10	+ 4	23.13	—3	44.5
	9		13.3943	27.2333	+ 25	—1.6	—1.4	40 42 13.89	— 5 49.63	— 46	— 43	— 9	23.28	—3	
Sept. 30	10		23.5420	20.3973	+ 37	+2.1	+ .9	40 37 43.23	— 1 19.53	— 5	+ 44	— 3	24.06	—3	43.9
	I 2	R	12.5993	27.0997	— 13	+ .7	— .8	40 42 29.89	— 6 6.23	— 49	+ 1	—10	23.08	+9	50.4
	3		18.3863	23.3873	+ 27	0	— .5	40 34 16.97	+ 2 6.39	+ 25	— 6	+ 3	23.58	+9	
	4		23.1290	19.8493	+ 29	—1.0	— .8	40 35 0.24	+ 1 22.92	+ 18	— 26	+ 3	23.11	+9	51.0
	5		24.1943	19.6960	+ 52	—1.8	—1.1	40 34 29.24	+ 1 53.76	+ 23	— 42	+ 3	22.84	+9	
	6		22.5923	22.1823	+ 6	—1.3	—1.0	40 36 13.11	+ 10.37	+ 10	— 32	0	23.26	+8	51.0
	7		11.8447ii	30.2907iv	— 9	+ .1	— .1	40 28 35.93	+ 7 45.90	+1.19	0	+15	23.17	+8	
	8		9.2243ii	32.6107iv	+ 18	+2.4	+ .1	40 26 30.99	+ 9 50.76	+1.37	+ 38	+17	23.67	+8	
	9		15.3503	26.8967	+ 78	+2.4	+ .2	40 31 30.71	+ 4 51.85	+ 50	+ 40	+ 8	23.54	+8	51.0
	10		27.2777	15.6893	+101	+1.1	+ .2	40 41 16.99	— 4 52.96	— 31	+ 20	—13	23.79	+6	
	II 1		22.0733	23.4087	+ 23	+1.5	+ .1	40 36 56.79	— 33.79	+ 8	+ 24	— 1	23.31	+6	
	2		23.3370	22.5350	+ 12	+1.8	+ .8	40 36 43.01	— 20.29	+ 7	+ 38	— 1	23.16	+6	50.2
	3		29.1037	12.3933	+ 71	— .8	— .3	40 29 19.84	+ 7 2.26	+ 70	— 16	+13	22.77	+7	49.8
	4		18.4017	23.2030	+ 25	—1.1	—2.1	40 38 24.72	— 2 1.34	— 8	— 44	— 3	22.83	+7	
	5		30.4173iv	13.1503ii	— 28	+ .2	—1.0	40 29 6.27	+ 7 16.07	+1.13	— 10	+12	23.49	+7	

* Turned in Azimuth.

1895	Pair		P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
Sept.						0			° ′ ″					° ′ ″		
30	II	6	R	10.8307^{ii}	30.5327^{iv}		+ .6	— .2	40 28 4.37	+ 8 17.65	+1.22	+ 7	+14	40 36 23.45	+6	48.7
		7		28.6853^{iv}	13.3500^{ii}	— 32	+ .5	0	40 29 54.65	+ 6 27.27	+1.05	+ 8	+11	23.16	+6	
		8		12.1377	27.7577	— 4	0	— .2	40 42 58.99	— 6 34.54	— 52	— 2	—11	23.80	+6	
		9		23.5970	20.7247	+ 37	—1.4	—1.6	40 37 36.72	— 1 12.65	+ 1	— 42	— 2	23.64	+5	48.5
	V	1	D	12.3833	28.2697	+ 29	— .3	—1.3	40 29 41.38	+ 6 41.36	+ 66	— 21	+11	23.30	—2	45.6
		2		21.8730	17.2623	— 14	+ .3	0	40 38 19.87	— 1 56.43	— 11	+ 4	— 3	23.34	—2	44.4
		3		31.5233^{iv}	7.9763^{ii}	— 6	— .2	—1.0	40 26 26 97	+ 9 54.78	+1.44	— 16	+24	23.27	—2	
		4		27.5417	13.0840	+ 27	+1.5	0	40 42 30.01	— 6 5.27	— 48	+ 23	—11	24 38	—2	
		5		7.7473^{ii}	31.2983^{iv}	— 12	+ .1	—1.6	40 26 27.82	+ 9 54.86	+1.39	— 19	+19	24.07	—2	45.0
		6		18.9887	20.0720	— 3	—2.7	—1.3	40 36 50.01	— 27.36	+ 9	— 58	— 1	22.15	—2	44.9
		7		27.5580	12.7150	+ 12	+ .2	—1.1	40 42 39.12	— 6 14.96	— 48	— 11	—12	23.45	—3	
		8		21.4873	16.9787	— 20	+1.7	+ .6	40 34 28.43	+ 1 53.84	+ 25	+ 34	+ 4	22.90	—3	
		9		25.8290	11.9930	— 87	+1.2	— .4	40 42 13.89	— 5 49.27	— 46	+ 14	— 9	24.21	—3	
Oct.		10		19.1683	22.3300	+ 13	— .6	0	40 37 43.21	— 1 19.90	— 5	— 10	— 3	23.13	—3	44.4
1	I	2	D	28.0270	13.5150	+ 65	— .2	+2.9	40 42 29.98	— 6 6.70	— 49	+ 34	—10	23.03	+9	57.9
		3		22.2557	17.3020	— 8	+ .2	+1.5	40 34 17.08	+ 2 5.10	+ 25	+ 22	+ 3	22.68	+9	
		4		16.8730	20.1337	— 29	+2 3	+2.6	40 35 0.35	+ 1 22.28	+ 18	+ 68	+ 3	23.52	+9	57.5
		5		17.5220	22.0133	— 8	+ .9	+ .1	40 34 29.37	+ 1 53.42	+ 23	+ 16	+ 3	23.21	+9	
		6		20.1677	20.5627	0	+1.4	+ .4	40 36 13.24	+ 9.98	+ 10	+ 26	0	23.58	+8	56.4
		7		30.0353	11.6120	+ 87	+ .6	+1.4	40 28 36.09	+ 7 45.56	+ 77	+ 28	+15	22.85	+8	
		8		31.7310^{iv}	8.3767^{ii}	0	+1.0	+2.1	40 26 31.16	+ 9 49.88	+1.36	+ 42	+17	22.99	+8	
		9		26.0273	14.4920	+ 14	+ .8	+1.2	40 31 30.90	+ 4 51.39	+ 50	+ 28	+ 8	23.15	+8	55.8
		10		14.7163	26.3540	+ 38	+1.3	+2.6	40 41 17.17	— 4 54.04	— 31	+ 53	—13	23.22	+7	55.4
	II	1		21.6140	20.2827	+ 7	+ .5	— .9	40 36 56.98	— 33.65	+ 8	— 4	— 1	23.36	+6	54.9
		2		20.4443	21.2507	+ 6	— .5	— .2	40 36 43.20	— 20.38	+ 7	— 10	— 1	22.78	+6	
		3		11.3210	28.0287	— 33	+ .9	+ .3	40 29 20.07	+ 7 1.92	+ 70	+ 18	+13	23.00	+7	54.4
		4		23.3237	18.4777	+ 26	+ .2	— .3	40 38 24.95	— 2 2.46	— 8	— 1	— 3	22.37	+6	
		5		11.2103^{ii}	28.4340^{iv}	+ 4	+1.7	+1.2	40 29 6.52	+ 7 15.05	+1.13	+ 42	+12	23.24	+7	
		6		30.8520^{iv}	11.1633^{ii}	0	—1.5	—1.0	40 28 4.63	+ 8 17.29	+1.22	— 36	+14	22.92	+6	54.0
		7		13.6863^{ii}	29.0117^{iv}	— 38	+ .3	— .1	40 29 54.97	+ 6 26.99	+1.05	+ 3	+11	23.15	+6	
		8		27.9723	12.3373	+ 13	— .8	—1.2	40 42 59.26	— 6 34.94	— 52	— 28	—11	23.41	+6	
		9		18.8117	21.7450	+ 7	—1.8	+ .8	40 37 36.98	— 1 14.10	+ 1	— 18	— 2	22.69	+5	53.6
	V	1	R	27.3980	11.5063	— 52	0	—1.2	40 29 41.41	+ 6 41.27	+ 66	— 16	+11	23.29	—2	49.8
		2		18.4037	23.0217	+ 21	+1.3	+ .4	40 38 20.00	— 1 56.69	— 11	+ 25	— 3	23.42	—2	
		3		10.2263^{ii}	33.7867^{iv}	+ 42	—2.2	—1.8	40 26 27.06	+ 9 55.20	+1.44	— 57	+24	23.37	—2	50.3
		4		13.6653	28.1327	+ 75	—2.7	—1.6	40 42 30.11	— 6 5.61	— 48	— 47	—11	23.44	—2	51.1
		5		34.8220^{iv}	11.3260^{ii}	+ 64	— .7	0	40 26 27.89	+ 9 53.63	+1.39	— 11	+19	22.99	—2	
		6		20.2920	19.2480	0	+ .3	— .3	40 36 50.07	— 26.37	+ 9	0	— 1	23.78	—2	
		7		13.3973	28.2497	+ 72	—2.7	0	40 42 39.16	— 6 15.33	— 48	— 26	—12	22 97	—3	51.1
		8		17.1270	21.6747	— 17	— .8	—1.9	40 34 28.45	+ 1 54.82	+ 25	— 36	+ 4	23.20	—3	
		9		12.8747	26.7193	— 15	— .9	— .1	40 42 13.90	— 5 49.66	— 46	— 16	— 9	23.53	—3	
Oct.		10		23.1357	20.0027	+ 29	+1.1	— .1	40 37 43.21	— 1 19.21	— 5	+ 16	— 3	24.08	—3	50.6
2	V	1	D	12.7673	28.5863	+ 63	+1.7	+1.3	40 29 41.68	+ 6 39.71	+ 66	+ 43	+11	22.59	—2	53.6
		2		23.4330	18.8267	+ 31	+ .1	— .9	40 38 20.14	— 1 56.42	— 11	— 10	— 3	23.48	—2	53.9
		3		31.2990^{iv}	7.7487^{ii}	— 12	—2.4	— .7	40 26 27.17	+ 9 54.80	+1.44	— 46	+24	23.19	—2	
		4		27.8283	13.3567	+ 51	0	—1.6	40 42 30.21	— 6 5.66	— 48	— 20	—11	23.76	—2	
		5		7.1870^{ii}	30.7507^{iv}	— 21	— .4	—3.2	40 26 27.99	+ 9 55.12	+1.39	— 47	+19	24.22	—2	
		6		20.1233	21.2033	+ 5	— .7	+1.2	40 36 50.13	— 27.29	+ 9	+ 4	— 1	22.96	—2	54.3
		7		27.4310	12.5593	0	— .2	— .8	40 42 39.22	— 6 15.62	— 48	— 13	—12	22.87	—3	53.6
		8		22.7840	18.2580	+ 17	+ .1	+ .3	40 34 28.49	+ 1 54.36	+ 25	+ 6	+ 4	23.20	—3	
		9		27.7390	13.8967	+ 66	+4.6	+3.3	40 42 13.93	— 5 49.80	— 46	+1.14	— 9	24.72	—3	53.2
Oct.		10		18.0300	21.2070	— 8	+1.6	+ .4	40 37 43.23	— 1 20.22	— 5	+ 30	— 3	23.23	—3	53.4
3	I	2	R	13.6880	28.1683	+ 78	+ .8	— .7	40 42 30.08	— 6 5.93	— 49	+ 4	—10	23.60	+9	63.4
		3		17.6790	22.6600	+ 6	+1.8	+ .6	40 34 17.22	+ 2 5.81	+ 25	+ 36	+ 3	23.67	+9	
		4		22.4157	19.1440	+ 17	—2.1	— .7	40 35 0.51	+ 1 22.68	+ 18	— 42	+ 3	22.98	+9	63.0

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Oct. 3	I 5	R	24.6127	20.1453	+ 63	— .3	+1.3	40 34 29.58	+ 1 52.99	+ 23	+ 12	+ 3	40 36 22.95	+9	
	6		22.2110	21.8313	+ 6	+ .3	0	40 36 13.47	+ 9.61	+ 10	+ 4	0	23.22	+8	
	7		11.4213	29.8497	+ 66	— .7	— .3	40 28 36.35	+ 7 45.60	+ 77	— 15	+15	22.72	+8	61.8
	8		8.6450ii	32.0200iv	+ 8	— .2	+ 1	40 26 31.46	+ 9 50.40	+1.37	— 2	+17	23.38	+9	
	9		13.7223	25 2647	— 34	0	— .2	40 31 31.21	+ 4 51.43	+ 50	+ 2	+ 8	23.24	+8	
	10		27.6830	16.0693	+129	+ .5	— .2	40 41 17.48	— 4 53.64	— 31	+ 5	—13	23.45	+7	60.9
	II 1		22.2283	23.5767	+ 25	— .4	— .5	40 36 57.32	— 34.12	+ 8	— 12	— 1	23.15	+7	60.6
Oct.	2		23.1480	22.3307	+ 11	+ .2	+ .9	40 36 43.58	— 20.67	+ 7	+ 14	— 1	23.11	+7	60.4
7	V 1	R	28.4850	12.6400	+ 53	— .9	—1.2	40 29 42.47	+ 6 40.35	+ 66	— 30	+11	23.29	—2	52.9*a*
	2		18.6653	23.3290	+ 28	— .5	—1.1	40 38 20.83	— 1 57.86	— 11	— 22	— 3	22.61	—2	53.4
	3		9.1177ii	32.6803iv	+ 19	—2.0	—2.1	40 26 27.73	+ 9 55.20	+1.44	— 58	+24	24.03	—2	*d*
	4		13.1767	27.7207	+ 38	— .8	+ .4	40 42 30.79	— 6 7.45	— 48	— 8	—11	22.67	—2	
	5		31.7597iv	8.2633ii	0	— .4	+ .7	40 26 28.50	+ 9 53.48	+1.39	+ 3	+19	23.59	—2	52.5
	6		22.3347	21.2527	+ 11	— .3	— .6	40 36 50.53	— 27.36	+ 9	— 12	— 1	23.13	—2	
	7		13.2953	28.1710	+ 65	— .4	+ .1	40 42 39.59	— 6 15.90	— 48	— 4	—12	23.05	—2	
	8		19.4567	23.9543	+ 45	— .9	— .1	40 34 28.79	+ 1 53.71	+ 25	— 16	+ 4	22.63	—3	53.1
	9		13.1893	27.1000	+ 11	+ .9	+ .9	40 42 14.25	— 5 51.39	— 47	+ 26	— 9	22.56	—3	
Oct.	10		21.8177	18.6230	+ 4	+1.5	+ .9	40 37 43.42	— 1 20.71	— 5	+ 34	— 3	22.97	—3	51.6
8	V 1	D	12.8740	28.6917	+ 73	—1.2	— .1	40 29 42.58	+ 6 39.71	+ 66	— 20	+11	22.86	—1	53.4
	2		23.3067	18.6350	+ 27	+1.5	+ .2	40 38 20.94	— 1 58.06	— 12	+ 26	— 3	22.99	—2	53.4
	3		31.1083iv	7.6137ii	— 16	+1.8	+2.5	40 26 27.80	+ 9 53.39	+1.44	+ 60	+24	23.47	—2	
	4		26.8397	12.2850	— 38	+ .6	+1.0	40 42 30.87	— 6 7.53	— 48	+ 22	—11	22.97	—2	
	5		7.8857ii	31.3997iv	— 9	+2.1	— .5	40 26 28.57	+ 9 53.89	+1.39	+ 26	+19	24.30	—2	52.6
	6		19.3413	20.4400	0	—2.1	—1.7	40 36 50.57	— 27.75	+ 9	— 54	— 1	22.36	—2	
	7		27.5937	12.7240	+ 14	— .2	— .1	40 42 39.63	— 6 15.62	— 48	— 4	—12	23.37	—2	52.2
	8		22.4077	17.8923	+ 5	+1.2	+ .6	40 34 28.81	+ 1 54.06	+ 25	+ 26	+ 4	23.42	—3	
	9		27.8377	13.9630	+ 75	+1.1	+ .4	40 42 14.21	— 5 50.64	— 47	+ 22	— 9	23.23	—3	
Oct.	10		18.4143	21.5883	0	— .8	—2.1	40 37 43.43	— 1 20.17	— 5	— 40	— 3	22.78	—3	52.6
9	V 1	R	27.0853	11.2560	— 76	—1.0	0	40 29 42.69	+ 6 39.62	+ 66	— 16	+11	22.92	—1	56.4
	2		16.9980	21.6643	— 20	0	—1.1	40 38 21.02	— 1 57.81	— 12	— 14	— 3	22.92	—2	56.0
	3		8.9967ii	32.4863iv	+ 16	+1.5	+1.1	40 26 27.86	+ 9 53.34	+1.44	+ 37	+24	23.25	—2	
	4		12.0800	26.6623	— 52	+2.0	+2.7	40 42 30.94	— 6 8.18	— 48	+ 66	—11	22.83	—2	55.4
	5		31.8633iv	8.3713ii	+ 3	—1.0	— .4	40 26 28.63	+ 9 53.37	+1.39	— 20	+19	23.38	—2	55.5
	6		21.0467	19.9697	+ 3	+ .5	+ .5	40 36 50.60	— 27.21	+ 9	+ 14	— 1	23.61	—2	55.1
	7		12.4847	27.3743	— 5	+2.0	+1.0	40 42 39.66	— 6 16.06	— 48	+ 44	—12	23.44	—2	
	8		17.6500	22.1577	— 3	— .4	— .9	40 34 28.82	+ 1 53.85	+ 25	— 18	+ 4	22.78	—3	55.0
	9		14.3737	28.2497	+108	—1.5	0	40 42 14.22	— 5 50.75	— 47	— 23	— 9	22.68	—3	
Oct.	10		21.7737	18.6290	+ 6	—2.4	—3.2	40 37 43.43	— 1 19.44	— 5	— 78	— 3	23.13	—3	54.1
14	I 2	D	27.9567	13.4337	+ 59	+2.0	+ .4	40 42 30.34	— 6 6.97	— 49	+ 36	—10	23.14	+9	59.6
	3		22.8003	17.8390	+ 10	— 9	— .6	40 34 17.66	+ 2 5.34	+ 25	— 22	+ 3	23.06	+9	
	4		17.8117	21.0410	— 12	+1.6	0	40 35 1.12	+ 1 21.53	+ 18	+ 25	+ 3	23.11	+9	59.4
	5		18.7097	23.1583	+ 28	+1.3	+2.2	40 34 30.33	+ 1 52.43	+ 23	+ 48	+ 3	23.50	+9	
	6		21.8047	22.1613	+ 5	— .3	— .6	40 36 14.26	+ 9.02	+ 10	— 12	0	23.26	+8	
	7		29.6063	11.2267	+ 45	— .2	—1.0	40 28 37.34	+ 7 44.34	+ 77	— 16	+15	22.44	+9	59.0
	8		32.0773iv	8.7320ii	+ 10	— .7	—1.0	40 26 32.59	+ 9 49.66	+1.36	— 24	+17	23.54	+9	58.6
	9		25.6797	14.1827	— 4	—1.9	— .4	40 31 32.47	+ 4 50.37	+ 50	— 34	+ 8	23.08	+9	58.6
	10		14.1163	25.8267	— 3	+1.4	+ .9	40 41 18.73	— 4 55.76	— 31	+ 33	—13	22.86	+7	58.1
	1		20.5933	19.1930	0	— .2	— .5	40 36 58.67	— 35.37	+ 8	— 10	— 1	23.27	+7	
	2		19.4533	20.2997	0	—1.8	—1.4	40 36 45.07	— 21.38	+ 7	— 46	— 1	23.29	+7	
	3		11.0983	27.7523	— 56	0	— .7	40 29 22.24	+ 7 0.49	+ 70	— 9	+13	23.47	+8	57.4
	5		10.9437ii	28.1130iv	+ 10	—1.0	—1.9	40 29 8.98	+ 7 13.68	+1.13	— 40	+12	23.51	+8	
	6		30.7927iv	11.1880ii	0	—3.3	—2.7	40 28 7.25	+ 8 15.16	+1.21	— 86	+14	22.90	+8	
	7		12.9127ii	28.1373iv	— 14	— .8	— .9	40 29 57.60	+ 6 24.49	+1.05	— 24	+11	23.01	+7	
	8		26.4313	10.6807	—136	— .9	—1.9	40 43 1.95	— 6 37.47	— 53	— 38	—11	23.46	+7	56.6
	9		18.8117	21.8350	+ 8	—1.1	0	40 37 39.47	— 1 16.38	+ 1	— 17	— 2	22.91	+6	56.5

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Oct.								° ′ ″					° ′ ″		
17	I 2	R	13.4967	28.0070	+ 64	+1.2	+2.2	40 42 30.31	— 6 6.68	— 49	+ 46	−10	40 36 23.50	+9	52.4b
	3		18.9687	23.9530	+ 44	−1.9	−1.8	40 34 17.67	+ 2 6.01	+ 25	— 52	+ 3	23.44	+9	
	4		21.8527	18.6310	+ 7	+ .7	+ .6	40 35 1.20	+ 1 21.40	+ 18	+ 18	+ 3	22.99	+9	52.0
	5		22.4137	17.9613	+ 7	+ .7	+ .9	40 34 30.45	+ 1 52.48	+ 23	+ 22	+ 3	23.41	+9	51.6
	6		22.5747	22.2427	+ 6	+1.0	+2.4	40 36 14.42	+ 8.40	+ 10	+ 46	0	23.38	+8	51.1
	7		11.5837	29.9613	+ 84	+2.0	+1.1	40 28 37.56	+ 7 44.40	+ 77	+ 45	+15	23.33	+9	
	8		9.0873ii	32.4060iv	+ 17	+2.2	+ .2	40 26 32.84	+ 9 49.05	+1.36	+ 36	+17	23.78	+9	
	9		13.5383	25.0120	— 49	+2.0	+2.3	40 31 32.76	+ 4 49.69	+ 49	+ 60	+ 8	23.62	+9	50.6
	10		14.4843	26.1670	+ 22	— .3	— .6	40 41 19.05	— 4 55.15	— 31	— 12	−13	23.34	+7	50.4
	II 1		21.9930	23.4127	+ 25	+ .2	+ .2	40 36 59.03	— 35.92	+ 8	+ 6	— 1	23.24	+7	
	2		22.9007	22.0283	+ 15	+1.0	— .8	40 36 45.47	— 22.07	+ 7	+ 6	— 1	23.52	+7	
	3		29.0703	12.4437	+ 73	−1.8	— .9	40 29 22.69	+ 7 0.16	+ 70	— 40	+13	23.28	+8	
	4		19.4110	24.3160	+ 53	— .9	— .5	40 38 27.58	— 2 4.03	— 9	— 20	— 4	23.22	+7	49.8
	5		29.7423iv	12.6263ii	— 20	— .9	— .2	40 29 9.52	+ 7 12.27	+1.13	— 16	+12	22.88	+8	
	6		10.2313ii	29.7807iv	0	+ .9	+1.0	40 28 7.83	+ 8 13.79	+1.20	+ 26	+14	23.22	+8	48.0
	7		27.6753iv	12.5083ii	— 5	+2.2	+1.6	40 29 58.20	+ 6 23.09	+1.05	+ 54	+11	22.99	+7	48.4
	8		12.2777	28.0337	+ 14	−2.3	— .8	40 43 2.56	— 6 38.02	— 53	— 46	−11	23.44	+7	48.5
Oct.	9		21.8670	18.8457	+ 8	−1.5	— .5	40 37 39.76	— 1 16.34	+ 1	— 30	— 2	23.11	+6	47.6
18	I 2	D	27.9377	13.4463	+ 60	— .2	— .6	40 42 30.26	— 6 6.18	— 49	— 10	−10	23.39	+9	54.1
	4		17.7577	20.9983	— 15	+1.5	+ .4	40 35 1.15	+ 1 21.81	+ 18	+ 28	+ 3	23.45	+9	
	5		17.3407	21.7963	— 13	+1.0	+ .7	40 34 30.46	+ 1 52.50	+ 23	+ 24	+ 3	23.46	+9	
	6		19.7720	20.1093	0	0	— .5	40 36 14.44	+ 8.52	+ 10	— 6	0	23.00	+8	53.6
	7		30.2797	11.9117	+120	−1.1	−1.1	40 28 37.59	+ 7 44 24	+ 77	— 31	+15	22.44	+9	
	8		31.8133iv	8.5047ii	+ 3	— .7	0	40 26 32.88	+ 9 48.74	+1.36	— 11	+17	23.04	+9	
	9		26.6117	15.1490	+ 60	+ .4	+ .1	40 31 32.82	+ 4 49.68	+ 49	+ 8	+ 8	23.15	+9	53.9
	10		13.4117	25.1313	— 50	— .6	— .1	40 41 19.11	— 4 55.89	— 31	— 11	−13	22.67	+7	53.4
	II 1		20.3917	18.9550	— 2	+2.6	+1.7	40 36 59.11	— 36.29	+ 8	+ 62	— 1	23.51	+7	
	2		19.1870	20.0900	— 4	−1.9	— .3	40 36 45.54	— 22.80	+ 7	— 34	— 1	22.46	+7	
	3		11.1253	27.7363	— 55	+1.8	0	40 29 22.81	+ 6 59.42	+ 70	+ 28	+13	23.34	+8	54.6
	4		21.7217	16.7680	— 22	+1.4	+ .2	40 38 27.70	— 2 5.06	— 9	+ 24	— 4	22.75	+7	54.9
	5		10.7453ii	27.8363iv	+ 13	+1.9	+1.2	40 29 9.67	+ 7 11.72	+1.13	+ 45	+12	23.09	+8	
	6		31.0127iv	11.4613ii	— 4	— .2	— .3	40 28 7.99	+ 8 13.82	+1.21	— 7	+14	23.09	+8	
	7		13.0967ii	28.2643iv	— 22	+1.9	+ .9	40 29 58.37	+ 6 23.04	+1.04	+ 41	+11	22.97	+7	54.1
	8		28.0330	12.2523	+ 12	+ .6	+ .1	40 43 2.71	— 6 38.62	— 53	+ 11	−11	23.56	+7	
	9		18.5350	21.6117	0	+ .8	+1.6	40 37 40.23	— 1 17.71	0	+ 33	— 2	22.83	+6	53.6
Oct.															
20	I 2	R	12.2267	26.7233	— 47	0	+ .5	40 42 30.14	— 6 6.04	— 49	+ 6	−10	23.57	+9	
	3		17.7050	22.6793	+ 7	+ .4	— .3	40 34 17.56	+ 2 5.66	+ 25	+ 2	+ 3	23.52	+9	
	4		22.3930	19.1287	+ 15	— .8	— .8	40 35 1.12	+ 1 22.49	— 6	— 22	+ 3	23.36	+9	52.5
	5		22.7107	18.2690	+ 13	+ .2	+ .6	40 34 30.43	+ 1 52.22	+ 23	+ 10	+ 3	23.01	+9	
	6		21.5383	21.2030	+ 3	+ .3	+ .4	40 36 14.44	+ 8.48	+ 10	+ 10	0	23.12	+8	52.6
Oct.	7		11.8260	30.1970	+109	+1.8	+ .3	40 28 37.62	+ 7 44.30	+ 77	+ 32	+15	23.16	+9	52.0
21	I 2	D	28.2833	13.8010	+ 90	+ .2	— .6	40 42 30.08	— 6 6.03	— 49	— 4	−10	23.42	+9	53.7
	3		22.7403	17.7753	+ 9	— .3	0	40 34 17.53	+ 2 5.43	+ 25	— 4	+ 3	23.20	+9	54.0
	4		18.2897	21.5270	— 2	+ .2	+ .7	40 35 1.11	+ 1 21.76	+ 18	+ 12	+ 3	23.20	+9	
	5		17.4447	21.8910	— 9	+1.4	+2.3	40 34 30.42	+ 1 52.28	+ 23	+ 51	+ 3	23.47	+9	53.1
Oct.	6		18.9333	19.2640	0	+ .5	+ .6	40 36 14.43	+ 8.35	+ 10	+ 15	0	23.03	+8	
24	I 2	R	13.2623	27.7457	+ 41	— .2	+ .4	40 42 29.95	— 6 5.90	— 49	+ 2	−10	23.48	+9	64.4
	3		17.8760	22.8523	+ 13	+ .1	+ .1	40 34 17.43	+ 2 5.71	+ 25	+ 3	+ 3	23.45	+9	
	4		22.8117	19.5717	+ 22	+ .4	+ .1	40 35 1.05	+ 1 21.89	+ 18	+ 8	+ 3	23.23	+9	64.0
	5		24.0437	19.6010	+ 46	+ .6	+1.8	40 34 30.41	+ 1 52.33	+ 23	+ 32	+ 3	23.32	+9	
	6		21.1747	20.8457	0	+ .8	+1.2	40 36 14.46	+ 8.31	+ 10	+ 28	0	23.15	+8	
	7		30.0963	11.7543	+100	+1.5	+2.0	40 28 37.70	+ 7 43.51	+ 76	+ 48	+15	22.60	+9	
	8		32.4210iv	9.1257ii	+ 15	+ .8	+ .7	40 26 33.05	+ 9 48.39	+1.36	+ 22	+17	23.19	+9	62.9
	9		25.6243	14.1703	— 8	+ .4	+1.2	40 31 33.05	+ 4 49.26	+ 49	+ 22	+ 8	23.10	+9	
	10		25.9963	14.2800	+ 8	+1.7	+ .3	40 41 19.39	— 4 55.93	— 31	+ 30	−13	23.32	+7	63.3

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.	
Oct.								° ′ ″					° ′ ″			
24	II 1	R	20.6450	22.0867	+ 13	—1.3	— .6	40 36 59.48	— 36.45	+ 8	— 28	— 1	40 36 22.82	+7	63.4	
	2		21.5467	20.6293	+ 5	+ .6	+2.6	40 36 46.00	— 23.19	+ 6	+ 42	— 1	23.28	+7		
	3		30.0150	13.4540	+168	—1.5	—1.1	40 29 23.36	+ 6 58.70	+ 70	— 37	+13	22.52	+8	63.2	
	4		19.0127	23.9760	+ 44	+ .8	+1.0	40 38 28.28	— 2 5.46	— 9	+ 25	— 4	22.94	+7		
	5		29.5037iv	12.4333ii	+ 96	— .2	+ .2	40 29 10.36	+ 7 11.38	+1.13	0	+12	22.99	+8		
	6		10.3780ii	29.8870iv	0	+2.0	+1.8	40 28 8.75	+ 8 12.73	+1.22	+ 54	+14	23.38	+8	63.6	
	7		28.3593iv	13.1997ii	— 24	0	— .2	40 29 59.17	+ 6 22.82	+1.05	— 2	+11	23.13	+8		
	8		12.1637	27.9873	+ 7	— .3	—1.1	40 43 3.57	— 6 39.67	— 53	— 18	—11	23.08	+7		
Oct.	9		22.6777	19.6140	+ 20	—1.2	— .7	40 37 41.02	— 1 17.43	0	— 28	— 2	23.29	+6	62.6	
25	VI 1	D	15.3373	23.9877	— 18	—2.7	—2.5	40 32 45.19	+ 3 38.47	+ 44	— 74	+ 7	23.43	—3	41.1	b
	2		24.6123	17.5397	+ 44	—7.7	—6.2	40 33 25.69	+ 2 58.76	+ 36	—1.98	+ 5	22.88	—3		
	3		28.0593	12.1757	+ 9	+2.7	+ .7	40 43 5.48	— 6 41.25	— 61	+ 51	—12	24.01	—3		
	4		24.0150	17.4547	+ 29	—1.4	—1.6	40 33 37.06	+ 2 45.78	+ 34	— 42	+ 5	22.81	—3	41.1	
	5		23.0350	17.8540	+ 15	— .8	+ .9	40 38 33.85	— 2 10.91	— 15	— 1	— 4	22.74	—3	41.5	
	6		9.3443ii	30.9197iv	0	— .7	—1.1	40 27 16.92	+ 9 5.01	+1.37	— 25	+20	23.25	—3		
	7		21.1510	19.0450	0	—1.4	—1.2	40 37 16.60	— 53.20	— 3	— 37	— 2	22.98	—4		
	8		12.8600	28.7753	+ 78	— .6	+ .1	40 43 5.69	— 6 42.22	— 61	— 8	—12	22.66	—4	41.0	
	9		29.6893iv	9.4517ii	0	+ .5	+2.0	40 27 50.08	+ 8 31.21	+1.29	+ 33	+16	23.07	—4		
	10		22.9293	16.5500	— 10	—3.9	—1.5	40 33 42.19	+ 2 41.11	+ 33	— 80	+ 5	22.88	—4	40.9	
	11		14.4380	27.5157	+ 74	— .6	+ .3	40 30 51.72	+ 5 30.54	+ 63	— 6	+10	22.93	—4		
Oct.	12		30.0793	8.1223	—117	—3.0	—1.7	40 27 7.92	+ 9 14.35	+1.01	— 68	+18	22.78	—4	41.6	
28	VI 1	R	25.8567	17.2277	+ 77	+ .5	0	40 32 45.14	+ 3 38.16	+ 44	+ 8	+ 7	23.89	—3	43.4	
	2		16.9347	23.9593	+ 18	+ .9	— .5	40 33 25.63	+ 2 57.48	+ 36	+ 8	+ 5	23.60	—3		
	3		13.0497	28.9240	+ 91	+ .7	+ .2	40 43 5.39	— 6 41.22	— 61	+ 14	—12	23.58	—3	42.9	
	4		17.6763	24.2767	+ 39	— .2	— .3	40 33 36.88	+ 2 46.82	+ 34	— 7	+ 5	24.02	—3		
	5		17.4317	22.5917	0	+ .6	+1.3	40 38 33.65	— 2 10.84	— 15	+ 26	— 4	22.88	—3	43.4	
	6		32.0150iv	10.4247ii	+ 11	+1.9	+1.1	40 27 16.68	+ 9 5.38	+1.37	+ 44	+20	24.07	—3		
	7		19.5593	21.6427	+ 8	—2.2	—1.1	40 37 16.32	— 52.65	— 3	— 48	— 2	23.14	—4		
	8		28.7170	12.8487	+ 75	— .8	—1.3	40 43 5.37	— 6 41.03	— 60	— 29	—12	23.33	—4	42.9	
	9		11.1590ii	31.4497iv	0	—1.2	—1.4	40 27 49.85	+ 8 32.55	+1.24	— 36	+16	23.44	—4		
Oct.	10		16.9313	23.3357	+ 5	+1.1	+1.0	40 33 41.75	+ 2 41.79	+ 33	+ 30	+ 5	24.22	—4	43.1	
29	VI 1	D	15.8880	24.5253	+ 11	— .8	—3.2	40 32 45.17	+ 3 38.21	+ 44	— 54	+ 7	23.35	—3	36.4	
	2		24.6057	17.5903	+ 45	—2.6	—1.3	40 33 25.65	+ 2 57.33	+ 36	— 57	+ 5	22.82	—3		
	3		28.7960	12.9423	+ 82	—1.7	+1.3	40 43 5.39	— 6 40.69	— 60	— 10	—12	23.88	—3	37.2	
	4		23.6700	17.1027	+ 16	—2.8	— .6	40 33 36.86	+ 2 45.94	+ 34	— 51	+ 5	22.68	—3		
	5		23.1203	17.9777	+ 17	+ .3	— .5	40 38 33.61	— 2 9.95	— 15	— 2	— 4	23.45	—3		a
	6		8.5807ii	30.1623iv	— 5	+ .2	+ .5	40 27 16.63	+ 9 5.16	+1.26	+ 10	+20	23.35	—3		
	7		21.5050	19.4090	+ 5	+ .9	— .1	40 37 16.26	— 52.96	— 3	+ 12	— 2	23.37	—4		
	8		12.1040	28.0007	+ 4	—1.7	+ .1	40 43 5.29	— 6 41.58	— 60	— 25	—12	22.74	—4	36.6	
	9		31.0477iv	10.7830ii	0	+ .3	+ .7	40 27 49.65	+ 8 31.91	+1.18	+ 14	+16	23.04	—4	36.4	
	10		23.3303	16.9493	+ 5	+ .2	+ .1	40 33 41.63	+ 2 41.19	+ 33	+ 4	+ 5	23.24	—4	36.5	
	11		12.8850	26.0197	— 43	+1.5	+ .4	40 30 51.13	+ 5 31.69	+ 63	+ 28	+10	23.83	—4		
Oct.	12		30.2763	8.3077	— 90	—1.6	+ .7	40 27 7.25	+ 9 14.72	+1.01	— 16	+18	23.00	—4	36.4	
30	VI 1	R	25.2563	16.6133	+ 48	—1.1	— .1	40 32 45.22	+ 3 38.46	+ 44	— 18	+ 7	24.01	—3	31.4	
	2		16.1147	23.0953	— 17	+2.4	+3.4	40 33 25.68	+ 2 56.30	+ 36	+ 80	+ 5	23.19	—3		b
	3		12.9173	28.7980	+ 81	+1.8	— .9	40 43 5.42	— 6 41.39	— 60	+ 16	—12	23.47	—3		
	4		17.9713	24.5500	+ 48	+ .9	+2.0	40 33 36.86	+ 2 46.32	+ 34	+ 40	+ 5	23.97	—3	31.5	
	5		17.9310	23.0653	+ 15	—2.0	— .9	40 38 33.60	— 2 9.74	— 15	— 42	— 4	23.25	—3		
	6		31.4273iv	9.8267ii	+ 5	0	+ .5	40 27 16.60	+ 9 5.70	+1.26	+ 6	+20	23.82	—3		
	7		19.4680	21.5847	+ 8	+ .7	— .2	40 37 16.21	— 53.50	— 3	+ 8	— 2	22.74	—4		
	8		27.9240	12.0860	0	— .7	—1.0	40 43 5.23	— 6 40.10	— 60	— 24	—12	24.17	—4	31.5	
	9		10.6640ii	30.9510iv	0	0	+ .1	40 27 49.57	+ 8 32.49	+1.18	+ 2	+16	23.42	—4	31.0	
	10		18.6797	25.0197	+ 72	+4.4	+4.6	40 33 41.53	+ 2 40.35	+ 33	+1.31	+ 5	23.57	—4	31.4	
	11		27.3030	14.1927	+ 58	+1.6	+3.2	40 30 51.02	+ 5 31.34	+ 63	+ 68	+10	23.77	—4		
	12		9.4387	31.4597	+ 53	—2.4	—1.9	40 27 7.12	+ 9 16.44	+1.02	— 63	+18	24.13	—4	31.0	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
Oct.								° ′ ″					° ′ ″		
31	II 1	D	20.5410	19.0810	0	+2.0	+ .2	40 37 0.12	— 36.88	+ 7	+ 34	— 1	40 36 23.64	+7	38.0
	2		20.1450	21.0903	+ 5	0	— .2	40 36 46.72	— 23.89	+ 6	— 2	— 1	22.86	+8	
	3		11.6427	28.1897	— 9	+1.9	+2.0	40 29 24.20	+ 6 57.97	+ 77	+ 56	+13	23.63	+8	37.4
	4		21.6737	16.6473	— 27	+1.9	+2.4	40 38 29.17	— 2 6.91	— 11	+ 62	— 4	22.73	+7	
	5		11.7463ii	28.7897iv	— 6	+ .1	+ .8	40 29 11.36	+ 7 10.53	+1.04	+ 12	+12	23.17	+8	
	6		29.7930iv	10.3117ii	0	— .3	— .4	40 28 9.86	+ 8 12.12	+1.13	— 10	+13	23.14	+8	37.4
	7		13.1393ii	28.2340iv	— 19	+2.6	+2.2	40 30 0.32	+ 6 21.26	+ 94	+ 70	+11	23.33	+8	
	8		27.4257	11.5597	— 45	0	— .2	40 43 4.76	— 6 40.68	— 60	— 2	—12	23.34	+8	
	9		18.3463	21.4823	0	—1.8	— .5	40 37 42.20	— 1 19.21	— 1	— 36	— 3	22.59	+6	37.6
	III 1		17.5220	26.4933	+105	0	+ .2	40 40 10.69	— 3 46.89	— 32	+ 2	— 7	23.43	+7	37.6
	2		3.8333ii	31.7390iv	—104	— .7	—1.0	40 24 37.22	+11 44.67	+1.51	— 24	+21	23.37	+7	
	4		27.4530	15.0607	+ 94	+ .7	+1.8	40 41 36.96	— 5 13.28	— 47	+ 35	— 8	23.48	+7	37.6
	5		18.0923	22.7447	+ 14	+ .3	— .1	40 38 20.58	— 1 57.56	— 13	+ 4	— 4	22.89	+6	
	6		27.3587	12.6620	0	+ .4	+ .4	40 42 35.40	— 6 11.25	— 49	+ 12	—14	23.64	+5	
	7		17.3630	23.9570	+ 25	+ .1	+ .9	40 39 9.76	— 2 46.64	— 22	+ 13	— 5	22.98	+5	37.2
	8	*	26.8380	15.5873	+ 81	+1.4	+1.7	40 41 8.46	— 4 44.41	— 40	+ 44	—10	23.99	—5	
	9		15.1520	26.0553	+ 39	+1.4	+1.2	40 31 46.95	+ 4 35.53	+ 56	+ 38	+10	23.52	+4	
	10		9.2673ii	30.1623iv	0	+ .6	— .2	40 27 34.18	+ 8 47.83	+1.19	+ 7	+15	23.42	+5	36.5
	VI 1	D	15.7380	24.3573	+ 4	+ .6	0	40 32 45.27	+ 3 37.75	+ 44	+ 10	+ 7	23.63	—3	33.5
	2		23.8717	16.8533	+ 16	—2.0	—1.8	40 33 25.77	+ 2 57.34	+ 36	— 56	+ 5	22.96	—3	
	4		24.3933	17.8097	+ 45	— .3	+ .1	40 33 36.87	+ 2 46.42	+ 34	— 4	+ 5	23.64	—3	32.8
	5		23.7650	18.6220	+ 36	+ .3	— .6	40 38 33.60	— 2 10.01	— 15	— 3	— 4	23.37	—3	
	6		10.2963ii	31.8953iv	+ 10	—2.3	—3.7	40 27 16.59	+ 9 5.66	+1.26	— 85	+20	22.86	—3	33.2
	7		21.9003	19.8083	+ 10	— .1	— .6	40 37 16.19	— 52.87	— 3	— 10	— 2	23.17	—4	33.1
	8		12.4527	28.3503	+ 37	+1.7	+ .5	40 43 5.19	— 6 41.69	— 63	+ 34	—12	23.09	—4	
	9		29.9627iv	9.6877ii	0	0	+ .3	40 27 49.51	+ 8 32.18	+1.18	+ 4	+16	23.07	—4	
	10		22.7717	16.3907	— 16	0	+ .7	40 33 41.45	+ 2 41.15	+ 33	+ 9	+ 5	23.07	—4	32.8
	11		14.6163	27.7633	+ 90	+ .1	+ .1	40 30 50.94	+ 5 32.35	+ 63	+ 3	+10	24.05	—4	
Nov.	12		31.7510	9.7843	+ 97	— .8	+ .1	40 27 7.01	+ 9 15.17	+1.01	— 12	+18	23.25	—4	32.9
3	II 2	R	20.8960	19.9520	+ 3	+1.5	+1.7	40 36 46.79	— 23.85	+ 6	+ 46	— 1	23.45	+7	48.9
	3		28.6093	12.0877	+ 33	— .2	+ .2	40 29 24.32	+ 6 57.40	+ 77	0	+13	22.62	+8	48.5*a*
	4		18.7677	23.7700	+ 39	+ .6	+1.4	40 38 29.33	— 2 6.46	— 11	+ 28	— 4	23.00	+7	
	5		29.2093iv	12.1817ii	— 12	— .3	+ .9	40 29 11.57	+ 7 10.07	+1.03	+ 6	+12	22.85	+8	
	6		11.2283ii	30.6763iv	— 2	+1.4	+2.0	40 28 10.11	+ 8 11.24	+1.13	+ 48	+13	23.09	+8	47.6
	7		27.6570iv	12.5857ii	— 3	+ .2	+ .2	40 30 0.60	+ 6 20.68	+ 94	+ 6	+11	22.39	+8	
	8		12.6850	28.5583	+ 59	— .5	+ .9	40 43 5.07	— 6 41.09	— 60	+ 4	—12	23.30	+8	48.2
	9		22.5243	19.3793	+ 17	— .3	+ .2	40 37 42.52	— 1 19.48	— 1	— 2	— 3	22.98	+7	48.2
Nov.	III 1		24.6397	15.6240	+ 6	+2.3	+1.8	40 40 11.09	— 3 47.74	— 32	+ 60	— 7	23.56	+7	48.1
6	II 1	D	20.5303	19.0773	0	+1.0	+ .4	40 37 0.20	— 36.70	+ 7	+ 21	— 1	23.77	+7	48.5
	2		18.1353	19.0773	— 10	—1.7	— .9	40 36 46.85	— 23.77	+ 6	— 39	— 1	22.74	+7	
	3		11.3937	27.9383	— 33	+ .6	+ .2	40 29 24.42	+ 6 57.83	+ 77	+ 12	+13	23.27	+8	47.9
	4		21.2317	16.2073	— 39	— .6	— .4	40 38 29.46	— 2 6.82	— 11	— 14	— 4	22.35	+8	47.1
	5		11.2983ii	28.3253iv	+ 5	— .7	— .3	40 29 11.72	+ 7 10.11	+1.03	— 16	+12	22.82	+8	
	6		31.2973iv	11.8220ii	— 6	—1.2	— .7	40 28 10.31	+ 8 11.93	+1.13	— 28	+13	23.22	+8	46.6
	7		13.7283ii	28.8170iv	— 37	+1.5	+1.2	40 30 0.82	+ 6 21.04	+ 94	+ 40	+11	23.31	+8	
	8		28.0653	12.1773	+ 11	+ .8	+1.2	40 43 5.31	— 6 41.35	— 60	+ 28	—12	23.52	+8	46.2
	9		19.2433	22.3870	+ 15	0	0	40 37 42.77	— 1 19.45	— 1	0	— 3	23.28	+8	
	III 1	R	25.4967	16.4937	+ 54	+ .6	+ .7	40 40 11.41	— 3 47.55	— 32	+ 18	— 7	23.65	+8	46.4
	2		34.2377iv	6.3920ii	+ 15	+1.5	0	40 24 37.95	+11 43.40	+1.50	+ 24	+21	23.30	+7	46.1
	3		13.7710	25.5513	— 24	— .8	— .4	40 41 21.38	— 4 57.51	— 43	— 18	— 9	23.17	+7	46.0
	4		14.3640	26.7727	+ 41	— .1	— .3	40 41 37.81	— 5 13.54	— 47	— 6	— 9	23.65	+7	45.1
	5		23.7810	19.1217	+ 40	— .2	0	40 38 21.44	— 1 57.79	— 13	— 3	— 4	23.45	+6	
	6		15.0447	29.7273	+205	+1.1	0	40 42 36.23	— 6 11.40	— 49	+ 18	—14	24.38	+5	44.6
	7		25.4020	18.8270	+ 82	— .3	—1.4	40 39 10.75	— 2 46.29	— 22	— 23	— 5	23.96	+6	44.4
	8		15.8983	27.1733	+102	— .6	—2.3	40 41 9.42	— 4 45.06	— 40	— 40	—10	23.46	+5	43.6

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Nov. 6	III 9	R	27.5900	16.7383	+140	+ .1	0	40 31 47.88	+ 4 34.46	+ 56	+ 2	+10	40 36 23.02	+5	a
	10		29.8977iv	9.0507ii	— 3	—2.7	— .9	40 27 35.21	+ 8 46.58	+1.19	— 55	+15	22.58	+5	41.3
	VI 1	R	24.6047	16.0053	+ 16	— .1	0	40 32 45.54	+ 3 37.27	+ 44	— 2	+ 7	23.30	—2	41.0
	2		16.5087	23.5023	0	— .3	— .8	40 33 25.99	+ 2 56.67	+ 36	— 16	+ 5	22.91	—3	
	3		14.1150	29.9620	+189	—1.2	— .2	40 43 5.57	— 6 40.78	— 60	— 22	—12	23.85	—3	40.4
	4		18.4507	25.0223	+ 67	0	+ .6	40 33 36.89	+ 2 46.18	+ 34	+ 8	+ 5	23.54	—3	40.0
	5		18.3993	23.5290	+ 31	+ .1	—1.3	40 38 33.56	— 2 9.65	— 15	— 16	— 4	23.56	—3	
	6		32.5257iv	10.9377ii	+ 17	— .1	0	40 27 16.50	+ 9 5.37	+1.26	— 2	+20	23.31	—3	
	7		19.9560	22.0303	+ 12	— .7	—1.0	40 37 16.03	— 52.43	— 3	— 24	— 2	23.31	—4	
	8		28.1420	12.2663	+ 18	+1.9	+1.4	40 43 4.95	— 6 41.07	— 60	+ 48	—12	23.64	—4	39.6
	9		9.9783ii	30.2850iv	0	— .7	— .3	40 27 49.17	+ 8 32.96	+1.18	— 16	+16	23.31	—4	39.4
	10		18.0263	24.4327	+ 49	+1.2	+1.6	40 33 41.01	+ 2 41.96	+ 33	+ 40	+ 5	23.75	—4	39.3
Nov.	12		9.7970	31.7720	+100	+2.5	+ .8	40 27 6.42	+ 9 15.35	+1.01	+ 50	+18	23.46	—4	39.6
10	II 1	R	20.2873	21.7633	+ 9	+ .9	+1.0	40 37 0.36	— 37.31	+ 7	+ 28	— 1	23.39	+7	41.1
	2		21.3657	20.4143	+ 5	— .5	— .6	40 36 47.05	— 24.04	+ 6	— 16	— 1	22.90	+7	
	3		29.7347	13.2350	+142	— .4	— .3	40 29 24.67	+ 6 57.15	+ 77	— 10	+13	23.62	+8	40.4
	4		19.2367	24.2450	+ 51	+ .2	— .8	40 38 29.74	— 2 6.64	— 11	— 8	— 4	22.87	+7	
	5		29.3290iv	12.3077ii	— 14	— .7	+ .1	40 29 12.05	+ 7 9.94	+1.03	— 10	+12	23.04	+8	40.2
	6		10.0650ii	29.5163iv	0	+1.0	+ .9	40 28 10.68	+ 8 11.35	+1.13	+ 28	+13	23.57	+8	39.9
	7		26.7797iv	11.6947ii	+ 24	— .7	— .3	40 30 1.22	+ 6 21.11	+ 94	— 16	+11	23.23	+8	40.2
	8		13.0707	28.9480	+ 92	— .8	— .9	40 43 5.74	— 6 41.30	— 60	— 24	—12	23.48	+8	40.3
	9		21.9727	18.8240	+ 9	— .9	— .8	40 37 43.21	— 1 19.56	— 1	— 25	— 3	23.36	+7	
	III 1	D	16.2083	25.2477	+ 39	0	— .2	40 40 11.92	— 3 48.44	— 32	— 2	— 7	23.07	+8	39.8
	2		4.1770ii	32.0303iv	— 88	+1.0	— .1	40 24 38.48	+11 43.37	+1.50	+ 14	+21	23.70	+7	
	3		24.8840	13.0347	— 74	+1.4	+1.4	40 41 21.93	— 4 59.13	— 43	+ 40	— 9	22.68	+7	
	4		26.6940	14.2547	+ 35	+ .5	+ .5	40 41 38.41	— 5 14.31	— 47	+ 14	— 9	23.68	+7	39.3
	5		17.5453	22.2320	— 5	—1.7	— .5	40 38 22.04	— 1 58.37	— 13	— 34	— 4	23.16	+6	
	6		25.3390	10 5733	—180	— .8	— .6	40 42 36.80	— 6 12.53	— 50	— 21	—14	23.42	+5	
	7		18.3637	24.9940	+ 66	— .5	— .6	40 39 11.41	— 2 47.66	— 22	— 16	— 5	23.32	+6	
	8		25.1940	13.8773	— 31	— .5	— .5	40 41 10.05	— 4 45.79	— 40	— 14	—10	23.62	+5	38.4
	9		15.0677	25.9187	+ 32	+1.2	+ .5	40 31 48.49	+ 4 34.18	+ 56	+ 26	+10	23.59	+5	
	10		9.8273ii	30.6663iv	+ 2	+ .4	+ .5	40 27 35.89	+ 8 46.41	+1.19	+ 13	+15	23.77	+5	39.3
	VI 1	D	16.3347	24.9587	+ 33	— .6	—1.9	40 32 45.56	+ 3 37.94	+ 44	— 34	+ 7	23.67	—2	33.8
	2		24.3473	17.3443	+ 36	+ .1	+ .1	40 33 25.98	+ 2 56.99	+ 36	+ 3	+ 5	23.41	—3	33.9
	3		28.5283	12.6747	+ 54	—1.7	+ .4	40 43 5.54	— 6 40.62	— 60	— 22	—12	23.98	—3	33.4
	4		23.6323	17.0387	+ 14	— .4	— .4	40 33 36.73	+ 2 46.60	+ 34	— 12	+ 5	23.60	—3	
	5		22.4587	17.3030	— 4	+1.4	+ .1	40 38 33.57	— 2 10.23	— 15	+ 24	— 4	23.39	—3	
	6		8.4177ii	30.0400iv	— 8	—1.3	—2.7	40 27 16.26	+ 9 6.19	+1.26	— 56	+20	23.35	—3	
	7		20.8230	18.7590	0	—1.0	— .9	40 37 15.77	— 52.14	— 3	— 28	— 2	23.30	—4	33.9
	8		11.8123	27.6540	— 23	—1.0	—2.3	40 43 4.62	— 6 40.13	— 60	— 48	—12	23.29	—4	
	9		29.7663iv	9.4627ii	0	+ .3	+2.0	40 27 48.78	+ 8 32.90	+1.18	+ 31	+16	23.33	—4	
	10		23.1950	16.7707	0	+ .3	+1.4	40 33 40.54	+ 2 42.29	+ 33	+ 23	+ 5	23.44	—4	33.3
	11		13.1733	26.3607	— 19	+ .1	— .4	40 30 49.96	+ 5 33.09	+ 63	— 4	+10	23.74	—4	
Nov.	12		29.4857	7.4403	—204	— .3	+ .3	40 27 5.85	+ 9 16.38	+1.02	— 1	+18	23.42	—4	33.6
11	II 1	D	21.0993	19.6113	0	+1.9	+1.1	40 37 0.40	— 37.59	+ 7	+ 45	— 1	23.32	+7	41.0
	2		19.4693	20.4147	0	— .9	0	40 36 47.10	— 23.88	+ 6	— 14	— 1	23.13	+7	41.2
	3		11.6753	28.2217	— 5	— .7	—1.0	40 29 24.73	+ 6 57.95	+ 76	— 24	+13	23.33	+8	40.9
	4		22.2597	17.2307	— 9	— .4	— .2	40 38 29.81	— 2 7.01	— 11	— 9	— 4	22.56	+7	
	5		11.1860ii	28.1893iv	+ 7	+1.8	+ .4	40 29 12.13	+ 7 9.54	+1.03	+ 34	+12	23.16	+8	
	6		29.3940iv	9.9460ii	0	— .2	—1.1	40 28 10.78	+ 8 11.27	+1.13	— 18	+13	23.13	+8	39.9
	7		13.9190ii	28.9827iv	— 41	+ .2	+ .8	40 30 1.32	+ 6 20.41	+ 94	+ 14	+11	22.92	+8	
	8		28.0830	12.1927	+ 13	—1.4	— .7	40 43 5.86	— 6 41.43	— 61	— 32	—12	23.38	+8	
	9		18.9023	22.0800	+ 9	+ .3	0	40 37 43.34	— 1 20.29	— 2	+ 5	— 3	23.05	+7	
	III 1	R	24.3340	15.2893	— 10	+ .1	+1.0	40 40 12.05	— 3 48.45	— 32	+ 14	— 7	23.35	+8	39.8
	2		33.0443iv	5.2217ii	— 42	+ .4	+ .4	40 24 38.62	+11 42.71	+1.50	+ 12	+21	23.16	+7	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Nov.								° ′ ″					° ′ ″		
11	II 3	R	13.6173	25.4563	— 32	+3.0	+3.2	40 41 22.07	— 4 58.98	— 43	+ 90	— 9	40 36 23.47	+7	
	4		14.2393	26.6963	+ 34	+1.4	+1.9	40 41 38.57	— 5 14.76	— 47	+ 47	— 9	23.72	+7	39.2
	5		23.2953	18.6150	+ 27	— .8	0	40 38 22.21	— 1 58.29	— 13	— 13	— 4	23.62	+6	
	6		12.8933	27.6773	+ 25	+ .7	+ .4	40 42 36.96	— 6 13.51	— 50	+ 16	—14	22.97	+5	38.8
	7		23.8167	17.1840	+ 20	— .4	0	40 39 11.59	— 2 47.60	— 22	— 6	— 5	23.66	+6	38.8
	8		14.7857	26.0963	+ 30	+1.0	+1.0	40 41 10.23	— 4 45.79	— 40	+ 29	—10	24.23	+5	38.4
	9		27.0773	16.2683	+107	+ .4	+2.5	40 31 48.66	+ 4 33.31	+ 56	+ 39	+10	23.02	+5	*a*
	10		30.3027iv	9.4727ii	0	—1.2	— .5	40 27 36.08	+ 8 46.18	+1.19	— 26	+15	23.34	+5	38.4
	VI 1	R	23.6223	15.0163	— 34	+ .5	+ .5	40 32 45.59	+ 3 37.32	+ 44	+ 14	+ 7	23.56	—2	35.1
	2		16.7153	23.7187	+ 9	+1.4	+1.7	40 33 26.00	+ 2 56.94	+ 36	+ 44	+ 5	23.79	—3	
	3		13.2563	29.1173	+109	—2.1	— .5	40 43 5.56	— 6 40.95	— 60	— 40	—12	23.49	—3	
	4		18.2550	24.8377	+ 60	+ .4	+1.0	40 33 36.72	+ 2 46.44	+ 34	+ 20	+ 5	23.75	—3	35.4
	5		16.9640	22.1130	— 14	0	0	40 38 33.35	— 2 10.04	— 15	0	— 4	23.12	—3	
	6		31.6453iv	10.0510ii	+ 8	+ .9	+2.2	40 27 16.23	+ 9 5.53	+1.26	+ 43	+20	23.65	—3	
	7		19.2590	21.3310	+ 5	0	+1.1	40 37 15.73	— 52.35	— 3	+ 14	— 2	23.47	—4	
	8		29.6193	13.8003	+159	+ .7	— .2	40 43 4.56	— 6 40.01	— 60	+ 9	—12	23.92	—4	34.7
	9		10.8737ii	31.2003iv	0	0	— .4	40 27 48.70	+ 8 33.48	+1.18	— 5	+16	23.47	—4	34.7
	10		18.1947	24.5880	+ 53	+2.4	+3.1	40 33 40.44	+ 2 41.64	+ 33	+ 79	+ 5	23.25	—4	34.3
	11		27.3423	14.2000	+ 59	+ .7	+ .7	40 30 49.80	+ 5 32.14	+ 63	+ 20	+10	22.87	—4	
	12		11.0237	33.0377	+264	— .9	— .9	40 27 5.72	+ 9 16.77	+1.02	— 26	+18	23.43	—4	34.0
Nov.															
15	II 1	R	20.2487	21.7023	+ 8	—1.0	— .3	40 37 0.39	— 36.74	+ 7	— 20	— 1	23.51	+7	
	2		21.8337	20.9147	+ 7	—2.9	—2.7	40 36 47.12	— 23.23	+ 6	— 82	— 1	23.12	+7	36.6
	3		29.4233	12.9283	+114	+ .7	0	40 29 24.80	+ 6 56.98	+ 77	+ 12	+13	22.80	+8	36.2
	4		19.5950	24.6043	+ 61	— .7	— .3	40 38 29.95	— 2 6.70	— 11	— 16	— 4	22.94	+7	
	5		29.0527iv	12.0497ii	— 10	— .4	— .5	40 29 12.28	+ 7 9.50	+1.03	— 13	+12	22.80	+8	
	6		10.9813ii	30.4260iv	0	+ .3	0	40 28 11.03	+ 8 11.20	+1.13	+ 5	+13	23.54	+8	35.2
	7		27.9723	12.9323	+ 40	+ .4	+ .7	40 30 1.61	+ 6 20.04	+ 69	+ 16	+11	22.61	+8	
	8		13.3687	29.2637	+123	— .8	+1.1	40 43 6.19	— 6 41.84	— 61	+ 2	—12	23.64	+8	35.5
	9	R	22.8100	19.6630	+ 23	—1.8	— .2	40 37 43.71	— 1 19.55	— 1	— 32	— 3	23.80	+7	
	III 1	D	15.9570	25.0047	+ 27	—1.7	—1.7	40 40 12.51	— 3 48.63	— 32	— 50	— 7	22.99	+8	35.1
	2		4.3587ii	32.1950iv	— 80	0	—1.6	40 24 39.11	+11 42.98	+1.50	— 21	+21	23.59	+8	34.9
	3		26.0907	14.2400	+ 12	+ .2	+ .3	40 41 22.60	— 4 59.40	— 43	+ 7	— 9	22.75	+7	
	4		27.1437	14.6747	+ 66	+ .2	— .6	40 41 39.14	— 5 15.15	— 47	— 5	— 9	23.38	+7	34.4
	5		17.9140	22.6567	— 8	— .5	— .8	40 38 22.81	— 1 59.79	— 13	— 18	— 4	22.67	+6	
	6		26.5843	11.7853	— 71	+1.4	+ .2	40 42 37.56	— 6 13.67	— 50	+ 25	—14	23.50	+6	33.9
	7		17.1930	23.8570	+ 20	—1.6	— .4	40 39 12.29	— 2 48.39	— 22	— 31	— 5	23.32	+6	33.6
	8		24.7637	13.4140	— 61	— .4	— .6	40 41 10.93	— 4 46.56	— 40	— 14	—10	23.73	+5	
	9		14.3247	25.1500	— 17	—1.7	—2.8	40 31 49.35	+ 4 33.42	+ 56	— 64	+10	22.79	+5	33.6
	I 1	D	13.2557	21.8890	—124	+ .1	—2.5	40 32 45.89	+ 3 37.78	+ 44	— 31	+ 7	23.87	—1	31.1
	2		24.2337	17.2727	+ 31	+ .9	+2.2	40 33 26.27	+ 2 55.93	+ 36	+ 43	+ 5	23.04	—3	
	3		27.6823	11.8067	— 23	—1.8	— .6	40 43 5.77	— 6 40.99	— 60	— 37	—12	23.69	—3	30.7
	4		24.1097	17.5900	+ 34	+1.1	+1.5	40 33 36.85	+ 2 44.79	+ 34	+ 37	+ 5	22.40	—3	
	5		22 4503	17.2890	— 4	0	0	40 38 33.43	— 2 10.38	— 15	0	— 4	22.86	—3	30.4
	6		7.7110ii	29.3110iv	— 15	+1.7	+ .6	40 27 16.25	+ 9 5.63	+1.26	+ 36	+20	23.70	—3	
	7		21.3807	19.2960	+ 6	+ .3	+ .1	40 37 15.72	— 52.68	— 3	+ 6	— 2	23.05	—4	
	8		12.8653	28.7393	+ 76	— .4	+ .7	40 43 4.50	— 6 41.20	— 60	+ 2	—12	22.60	—4	30.8
	9		29.4223iv	9.1107ii	0	— .7	+ .7	40 27 48.55	+ 8 33.12	+1.18	— 2	+16	22.99	—4	30.2
	10		23.4587	17.0253	+ 10	+ .2	+ .1	40 33 40.23	+ 2 42.55	+ 33	+ 4	+ 5	23.20	—4	
	11		13.0977	26.2907	— 23	— .2	— .7	40 30 49.55	+ 5 33.23	+ 63	— 12	+10	23.39	—4	
	VI 12		29.5073	7.4477	—200	—2.2	— .9	40 27 5.38	+ 9 16.77	+1.02	— 47	+18	22.88	—4	29.9
Nov.															
16	II 1	D	20.2760	18.8000	— 3	+1.9	+1.0	40 37 0.35	— 37.28	+ 7	+ 44	— 1	23.57	+7	34.1
	2		19.1177	20.0833	— 3	—1.0	0	40 36 47.09	— 24.38	+ 6	— 16	— 1	22.60	+7	
	3		11.3123	27.8740	— 41	— .4	—2.3	40 29 24.78	+ 6 58.28	+ 77	— 36	+13	23.60	+8	33.9
	4		20.7003	15.6737	— 54	—1.2	— .4	40 38 29.95	— 2 6.84	— 11	— 24	— 4	22.72	+7	
	5		11.9890ii	28.9993iv	— 9	+ .5	—1.1	40 29 12.31	+ 7 9.69	+1.03	— 6	+12	23.09	+8	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections. Micrometer	Corrections. δ	Corrections. l	Corrections. r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Nov. 16	II 6	D	30.8710iv	11.4360ii	− 3	− .1	− .4	40 28 11.04	+ 8 10.95	+1.13	− 6	+13	40 26 23.19	+8	33.5
	7		12.0360ii	27.1077iv	+ 15	−1.5	−1.5	40 30 1.63	+ 6 20.77	+ 94	− 44	+11	23.01	+8	33.0
	8		27.5957	11.6507	− 33	+1.5	+ .9	40 43 6.23	− 6 42.71	− 61	+ 36	−12	23.15	+8	
	9		18.4860	21.6667	0	+ .3	− .3	40 37 43.76	− 1 20.35	− 2	+ 1	− 3	23.37	+7	
	III 1	R	24.8507	15.7863	+ 19	+ .8	− .1	40 40 12.58	− 3 49.03	− 32	+ 12	− 7	23.28	+8	32.6
	2		33.6280iv	5.8400ii	− 13	+ .5	+2.3	40 24 39.19	+11 41.94	+1.50	+ 38	+21	23.22	+8	
	3		17.3353	29.1167	+223	− .4	− .8	40 41 22.69	− 4 58.19	− 43	− 17	− 9	23.81	+7	
	4		14.3197	26.8030	+ 40	+ .7	+ .4	40 41 39.25	− 5 15.46	− 47	+ 16	− 9	23.39	+7	32.6
	5		23.5317	18.7863	+ 36	+2.1	+1.0	40 38 22.92	− 1 59.97	− 13	+ 47	− 4	23.25	+7	
	6		13.9967	28.7703	+120	−1.0	− .3	40 42 37.68	− 6 13.51	− 50	− 20	−14	23.33	+6	
	7		24.0313	17.3757	+ 29	− .9	− .9	40 39 12.42	− 2 48.20	− 22	− 26	− 5	23.69	+6	
	8		15.1290	26.4747	+ 55	−1.5	− .5	40 41 11.07	− 4 46.76	− 40	− 30	−10	23.51	+5	32.9
	9		27.5143	16.7120	+134	+ .5	+ .5	40 31 49.49	+ 4 33.22	+ 56	+ 14	+10	23.51	+5	
Nov. 26	10		30.5040iv	9.7220ii	0	− .1	0	40 27 36.99	+ 8 45.00	+1.18	− 2	+15	23.30	+6	
	II 1	R	20.1383	21.6300	+ 8	+ .6	+ .5	40 37 0.15	− 37.70	+ 7	+ 16	− 1	22.67	+6	29.4
	2		21.4650	20.5213	+ 5	−2.1	−1.2	40 36 46.95	− 23.85	+ 6	− 50	− 1	22.65	+7	
	3		30.2170	13.7320	+191	+1.2	+1.7	40 29 24.71	+ 6 56.94	+ 77	+ 42	+13	22.97	+8	29.5
	4		18.7467	23.7933	+ 38	+ .8	+1.2	40 38 30.05	− 2 7.58	− 11	+ 28	− 4	22.60	+7	
	5		29.1880iv	12.2317ii	− 12	+2.1	+1.8	40 29 12.44	+ 7 8.33	+ 94	+ 58	+12	22.41	+8	
	6		10.4977ii	29.8963iv	0	+1.9	+1.3	40 28 11.31	+ 8 10.06	+1.04	+ 48	+13	23.02	+8	
	7		27.0953iv	12.0680ii	+ 14	+2.0	+ .8	40 30 1.99	+ 6 19.66	+ 85	+ 42	+11	23.03	+8	29.9
	8		12.3830	28.3353	+ 33	+1.1	+ .4	40 43 6.70	− 6 43.08	− 61	+ 22	−12	23.11	+8	
	9		22.6290	19.4420	+ 19	−1.6	− .4	40 37 44.38	− 1 20.56	− 2	− 30	− 3	23.47	+7	
	III 1		25.0043	15.9093	+ 24	+ .9	+ .6	40 40 13.50	− 3 49.83	− 33	+ 22	− 7	23.49	+8	29.5
	2		33.3847iv	5.6263ii	− 22	− .9	+ .6	40 24 39.99	+11 41.19	+1.41	− 6	+21	22.74	+7	
	3		14.7883	26.6627	+ 51	+1.6	+ .4	40 41 23.57	− 5 0.10	− 44	+ 31	− 9	23.25	+7	
	4		13.5203	26.0710	− 17	+1.3	+2.3	40 41 40.25	− 5 17.02	− 47	+ 51	− 9	23.18	+7	
	5		22.8840	18.1107	+ 14	− .9	+ .6	40 38 24.01	− 2 0.58	− 13	− 6	− 4	23.20	+7	
	6		13.6870	28.4903	+ 95	− .6	− .2	40 42 38.78	− 6 14.21	− 50	− 12	−14	23.81	+6	28.6
	7		23.5163	16.7727	+ 5	+ .4	+ .7	40 39 13.71	− 2 50.37	− 23	+ 16	− 5	23.22	+7	28.4
	8		14.8497	26.2543	+ 38	− .1	+ .2	40 41 12.37	− 4 48.20	− 40	+ 1	−10	23.68	+6	28.0
	9		25.8323	15.0717	+ 30	+1.8	+2.2	40 31 50.78	+ 4 31.92	+ 56	+ 58	+10	23.94	+5	
Nov. 29	10		29.5170iv	8.8073ii	0	0	+1.2	40 27 38.40	+ 8 43.18	+1.09	+ 16	+15	22.98	+6	28.0
	II 2	D	19.1203	20.0840	− 3	− .2	+1.4	40 36 46.78	− 24.34	+ 6	+ 15	− 1	22.64	+7	38.2
Nov. 30	3	D	11.2000	27.7497	− 51	+1.5	0	40 29 24.39	+ 6 57.91	+ 77	+ 24	+13	23.44	+7	45.8
	4		22.0543	17.0047	− 16	+ .5	+ .1	40 38 29.91	− 2 7.51	− 11	+ 10	− 4	23.35	+7	
	5		12.0407ii	29.0407iv	− 11	+1.7	+1.3	40 29 12.30	+ 7 9.39	+ 84	+ 44	+12	23.09	+8	
	6		30.2460iv	10.8160ii	0	− .2	− .2	40 28 11.24	+ 8 10.80	+ 94	− 6	+13	23.05	+8	45.3
	7		13.2247ii	28.2827iv	− 24	− .6	− .6	40 30 1.97	+ 6 20.30	+ 74	− 18	+11	22.94	+8	45.4
	8		28.4690	12.5443	+ 46	−1.4	+ .2	40 43 6.74	− 6 42.37	− 61	− 20	−12	23.44	+8	45.2
	9		18.5067	21.7417	0	+ .9	+1.3	40 37 44.50	− 1 21.72	− 2	+ 32	− 3	23.05	+7	44.6
	III 1		16.1993	25.2800	+ 39	−1.1	−1.4	40 40 13.46	− 3 49.47	− 33	− 36	− 7	23.23	+8	
	2		4.9677ii	32.7470iv	− 52	+ .3	+1.4	40 24 40.19	+11 41.58	+1.31	+ 23	+21	23.52	+7	
	3		25.8773	13.9830	− 5	0	+1.1	40 41 23.82	− 5 0.43	− 44	+ 14	− 9	23.00	+7	
	4		26.4704	13.9457	+ 17	+ .4	− .6	40 41 40.56	− 5 16.41	− 47	− 2	− 9	23.57	+7	
	5		18.3097	23.1320	+ 20	+2.2	+2.2	40 38 24.38	− 2 1.86	− 13	+ 64	− 4	22.99	+7	43.6
	6		26.8553	12.0013	− 50	+ .8	+ .1	40 42 39.19	− 6 15.08	− 50	+ 14	−14	23.61	+6	
	7		17.0247	23.7637	+ 16	−1.9	−1.9	40 39 14.18	− 2 50.27	− 23	− 55	− 5	23.08	+7	42.3
	8		26.2690	14.8350	+ 38	+ .1	0	40 41 12.88	− 4 48.92	− 41	+ 2	−10	23.47	+6	
	9		14.6480	25.3867	0	− .8	−2.1	40 31 51.30	+ 4 31.26	+ 56	− 40	+10	22.82	+6	
Dec. 4	10		10.3670ii	31.0923iv	+ 3	−1.4	− .9	40 27 38.97	+ 8 43.52	+ 99	− 34	+15	23.29	+6	42.3
	II 2	R	21.8137	20.9167	+ 7	− .7	− .7	40 36 46.34	− 22.68	+ 6	− 20	− 1	23.51	+6	28.0
	3		28.1427	11.5927	− 13	− .2	−2.0	40 29 24.14	+ 6 58.08	+ 85	− 29	+13	22.91	+7	27.4
	4		17.9337	22.9607	+ 14	−1.5	+ .7	40 38 29.64	− 2 7.04	− 14	− 15	− 4	22.27	+7	
	5		28.7897iv	11.7963ii	− 7	+1.0	+2.0	40 29 12.02	+ 7 9.29	+ 92	+ 42	+12	22.77	+8	27.4

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 4	II 6	R	10.5067ii	29.9317iv	0	+2.3	+2.7	40 28 11.06	+ 8 10.74	+1.03	+ 72	+13	40 36 23.68	+8	
	7		27.6140iv	12.5617ii	− 3	+ .6	+ .9	40 30 1.78	+ 6 20.26	+ 82	+ 21	+11	23.18	+8	
	8		12.7937	28.7493	+ 72	+1.6	+1.7	40 43 6.61	− 6 43.28	− 68	+ 48	−12	23.01	+7	26.8
	9		23.9800	20.7893	+ 44	− .6	+ .1	40 37 44.45	− 1 20.72	− 3	− 8	− 3	23.59	+7	
	III 1		24.0407	14.9240	− 29	+1.4	+ .6	40 40 13.43	− 3 50.24	− 37	+ 30	− 7	23.05	+8	26.3
	2		32.9033iv	5.1437ii	− 46	− .8	+ .9	40 24 40.20	+11 41.18	+1.44	− 2	+21	23.01	+7	
	3		14.6787	26.5587	+ 46	+1.9	+1.3	40 41 23.87	− 5 0.24	− 49	+ 48	− 9	23.53	+7	
	4		15.1763	27.7290	+109	+1.2	+1.4	40 41 40.66	− 5 17.39	− 53	+ 38	− 9	23.03	+7	25.8
	5		23.8393	19.0463	+ 41	− .2	+ .6	40 38 24.54	− 2 1.19	− 16	+ 5	− 4	23.20	+7	25.4
	6		14.2107	29.0733	+141	+2.1	+1.0	40 42 39.37	− 6 15.83	− 56	+ 47	−14	23.31	+6	
	7		24.5690	17.8160	+ 47	+1.4	+ .4	40 39 14.45	− 2 50.72	− 26	+ 28	− 5	23.70	+7	25.2
	8		15.4877	26.9547	+ 83	+1.8	+1.8	40 41 13.16	− 4 49.90	− 46	+ 52	−10	23.22	+6	
	9		26.4740	15.7837	+ 74	+1.7	+1.5	40 31 51.58	+ 4 30.26	+ 60	+ 47	+10	23.01	+6	
	10		30.9723iv	10.2640ii	0	−2.3	−1.6	40 27 39.28	+ 8 43.16	+1.09	− 58	+15	23.10	+6	24.1
	V 7	R	13.8793	28.9273	+122	+ .5	+1.5	40 42 43.74	− 6 20.49	− 63	+ 28	−13	22.77	0	20.2
	8		19.4373	23.8060	+ 41	+1.1	+2.0	40 34 32.16	+ 1 50.48	+ 29	+ 44	+ 4	23.41	−1	
	9		14.0233	28.0180	+ 84	−1.4	− .5	40 42 17.58	− 5 53.77	− 60	− 29	−10	22.82	−1	
	10		23.8967	20.6393	+ 43	+ .4	+ .6	40 37 46.05	− 1 22.41	− 9	+ 14	− 3	23.66	−1	20.4
Dec. 5	VI 2		17.6537	24.5630	+ 45	+4.8	+3.7	40 33 27.36	+ 2 54.67	+ 39	+1.26	+ 5	23.73	−2	
	V 7	D	24.3097	9.2417	−288	− .7	−1.0	40 42 43.80	− 6 19.95	− 63	− 24	−13	22.85	0	22.2
	8		21.8680	17.4967	− 10	−1.8	−1.1	40 34 32.21	+ 1 50.41	+ 29	− 44	+ 4	22.51	0	
	9		27.2360	13.2353	+ 20	− .2	−2.2	40 42 17.63	− 5 53.76	− 60	− 32	−10	22.85	−1	22.5
	10		17.6740	20.9463	− 14	− .2	− .6	40 37 46.10	− 1 22.63	− 8	− 11	− 3	23.25	−1	
	VI 1		15.3730	23.9283	− 18	−1.1	−1.6	40 32 47.10	+ 3 36.10	+ 47	− 38	+ 7	23.36	−1	21.4
	2		22.1087	15.1550	− 56	+ .5	+ .2	40 33 27.35	+ 2 55.54	+ 39	+ 10	+ 5	23.43	−2	
	3		28.5230	12.6050	+ 51	−1.2	−1.2	40 43 6.68	− 6 42.28	− 68	− 35	−12	23.25	−2	
	4		23.2650	16.7000	0	−1.9	−1.4	40 33 37.38	+ 2 45.86	+ 37	− 48	+ 5	23.18	−2	21.4
	5		21.9487	16.8077	− 22	− .5	−2.1	40 38 33.80	− 2 9.82	− 17	− 36	− 4	23.41	−3	
Dec. 6	6		8.5967ii	30.1937iv	− 5	+ .4	+ .3	40 27 16.36	+ 9 5.61	+1.17	+ 10	+20	23.44	−3	20.9
	II 2	D	18.2257	19.1483	− 7	0	− .4	40 36 46.22	− 23.29	+ 6	− 5	− 1	22.93	+6	27.0
	3		10.4123	26.9753	−129	+ .7	+1.0	40 29 24.01	+ 6 58.11	+ 85	+ 24	+13	23.34	+7	
	4		22.7350	17.7217	+ 5	−1.1	−1.0	40 38 29.55	− 2 6.67	− 14	− 30	− 4	22.40	+7	
	6		30.2470iv	10.7717ii	0	−2.3	−2.9	40 28 10.95	+ 8 12.01	+1.03	− 74	+13	23.38	+8	25.9
	7		13.2210ii	28.2960iv	− 24	+ .1	+1.5	40 30 1.72	+ 6 20.79	+ 82	+ 21	+11	23.65	+8	
	8		27.8197	11.9000	− 14	− .4	− .3	40 43 6.59	− 6 42.15	− 68	− 10	−12	23.54	+7	25.5
	III 1		16.4817	25.5653	+ 55	−1.1	−1.0	40 40 13.45	− 3 49.62	− 37	− 30	− 7	23.09	+8	
	2		4.8777ii	32.6633iv	− 57	− .8	0	40 24 40.23	+11 41.81	+1.44	− 13	+21	23.56	+7	
	3		25.6767	13.7683	− 20	+1.5	+2.0	40 41 23.92	− 5 0.79	− 49	+ 50	− 9	23.05	+7	
	4		26.0023	13.4517	− 20	+1.8	+1.5	40 41 40.74	− 5 17.02	− 53	+ 48	− 9	23.58	+7	25.5
	5		17.2400	22.0443	− 13	−1.1	−1.3	40 38 24.64	− 2 1.34	− 15	− 34	− 4	22.77	+7	
	6		26.1880	11.3410	−107	− .2	− .7	40 42 39.49	− 6 14.81	− 57	− 12	−14	23.85	+6	
	7		17.0940	23.8753	+ 21	+ .4	− .5	40 39 14.55	− 2 51.38	− 26	0	− 5	22.86	+7	
	8		26.1163	14.6597	+ 26	− .4	+ .4	40 41 13.30	− 4 49.50	− 46	− 2	−10	23.22	+6	23.9
	9		14.1570	24.8890	− 31	−1.2	−1.5	40 31 51.73	+ 4 31 05	+ 61	− 39	+10	23.10	+6	
	10		10.7787ii	31.4697iv	+ 4	− .9	− .9	40 27 39.45	+ 8 42.74	+1.09	− 26	+15	23.17	+6	23.6
Dec. 7	III 1	R	24.5037	15.4143	0	+ .1	− .1	40 40 13.46	− 3 49.63	− 37	0	− 7	23.39	+8	30.3
	2		33.7700iv	6.0390ii	− 3	+2.8	+1.2	40 24 40.26	+11 40.55	+1.44	+ 60	+21	23.06	+7	30.4
	3		13.4237	25.3037	− 47	−1.0	− .2	40 41 23.96	− 5 0.00	− 49	− 18	− 9	23.20	+7	30.4
	4		14.0387	26.5890	+ 25	− .7	− .2	40 41 40.79	− 5 17.12	− 53	− 14	− 9	22.91	+7	
	5		23.5087	18.7177	+ 32	− .3	0	40 38 24.70	− 2 1.11	− 15	− 5	− 4	23.35	+7	
	6		14.2770	29.0987	+147	− .5	− .5	40 42 39.56	− 6 14.80	− 57	− 14	−14	23.91	+6	29.6
	7		23.9390	17.1823	+ 21	−1.3	− .4	40 39 14.64	− 2 50.75	− 26	− 26	− 5	23.32	+7	
	8		15.6683	27.0867	+ 95	− .5	− .3	40 41 13.40	− 4 48.70	− 46	− 12	−10	24.02	+6	
	9		27.0713	16.3660	+109	− .4	− .1	40 31 51.82	+ 4 30.72	+ 61	− 8	+10	23.17	+6	
	10		31.0177iv	10.3567ii	0	− .3	+1.2	40 27 39.55	+ 8 41.95	+1.08	+ 10	+15	22.83	+6	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 7	V 7	R	14.5463	29.5327	+179	—2.1	—1.6	40 42 43.94	— 6 19.06	— 63	— 55	—13	40 36 23.57	0	21.1
	8		17.7953	22.1997	0	—1.8	—2.4	40 34 32.33	+ 1 51.27	+ 29	— 60	+ 4	23.33	0	
	9		13.4833	27.4533	+ 40	—2.8	—2.6	40 42 17.77	— 5 53.04	— 60	— 79	—10	23.24	—1	
	10		22.4103	19.1627	+ 15	— .8	—1.4	40 37 46.20	— 1 22.08	— 8	— 31	— 3	23.70	—1	
	VI 1		25.3350	16.7837	+ 55	—1.8	— .6	40 32 47.19	+ 3 36.18	+ 47	— 37	+ 7	23.54	—1	22.6
	2		17.1067	24.0593	+ 23	—1.2	—1.4	40 33 27.44	+ 2 55.71	+ 39	— 38	+ 5	23.21	—2	
	3		13.1127	29.0020	+ 96	— .1	—1.6	40 43 6.74	— 6 41.67	— 68	— 22	—12	24.05	—2	21.6
	4		17.9750	24.5657	+ 52	—1.3	—1.2	40 33 37.41	+ 2 46 64	+ 37	— 36	+ 5	24.11	—2	
Dec. 10	5		17.3123	22.4897	— 4	0	+ .6	40 38 33.81	— 2 10.79	— 17	+ 8	— 4	22.89	—3	
	III 1	D	16.1077	25.2177	+ 36	+ .4	+1.8	40 40 13.53	— 3 50.23	— 37	+ 30	— 7	23.16	+7	34.3
	2		5.0630ii	32.8340iv	— 50	— .4	— .1	40 24 40.36	+11 41.42	+1.44	— 8	+21	23.35	+7	
	3		26.8923	15.0003	+ 67	+ .2	+ .4	40 41 24.09	— 5 0.58	— 49	+ 8	— 9	23.01	+7	34.2
	4		26.6530	14.0977	+ 28	— .6	—2.0	40 41 40.95	— 5 17.24	— 53	— 36	— 9	22.73	+7	34.1
	5		17.4637	22.2893	— 4	+ .5	— .3	40 38 24.92	— 2 1.89	— 16	+ 4	— 4	22.87	+7	
	6		27.5803	12.7113	+ 12	+ .1	+ .2	40 42 39.82	— 6 15.65	— 57	+ 4	—14	23.50	+6	33.2
	7		17.7543	24.5413	+ 48	— .2	— .4	40 39 14 93	— 2 51.57	— 26	— 8	— 5	22.97	+7	33.1
	8		25.5970	14.1230	— 9	+ .3	— .5	40 41 13.72	— 4 49.83	— 46	— 2	—10	23.31	+6	
	9		13.0147	23.7343	—103	+ .1	0	40 31 52.16	+ 4 30.53	+ 60	0	+10	23.39	+6	
	10		9.8953ii	30.5750iv	0	+ .2	— .3	40 27 39.90	+ 8 42.40	+1.08	— 1	+15	23.52	+6	32.9
	V 7	D	26.7513	11.6917	— 68	0	+ .4	40 42 44.27	— 6 20.27	— 63	+ 5	—13	23.29	0	31.4
	8		23.0380	18.6803	+ 23	—1.0	— .3	40 34 32.63	+ 1 50.14	+ 28	— 20	+ 4	22.89	0	
	9		28.3223	14.3107	+108	+ .4	+ .7	40 42 18.09	— 5 54.24	— 60	+ 16	—10	23.31	0	
	10		17.7753	21.0773	— 14	+ .5	+ .3	40 37 46.49	— 1 23.38	— 9	+ 12	— 3	23.11	—1	31.1
	VI 1		16.2233	24 7353	+ 24	+1.2	+ .8	40 32 47.45	+ 3 35.09	+ 47	+ 30	+ 7	23.38	—1	
	2		22.4947	15.5277	— 41	—2.2	—2.3	40 33 27.68	+ 2 55.90	+ 39	— 66	+ 5	23.36	—1	31.4
	3		29.0163	13.0990	+ 97	— .2	+1.3	40 43 6.96	— 6 42.35	— 68	+ 14	—12	23.95	—2	31.0
	4		22.9367	16.4053	— 15	— .5	— .9	40 33 37.58	+ 2 44.96	+ 37	— 20	+ 5	22.76	—2	
	5		21.8650	16.6947	— 22	— .5	—1.0	40 38 33.94	— 2 10.55	— 17	— 21	— 4	22.97	—2	
Dec. 12	6		8.4937ii	30.0853iv	— 7	+ .8	+ .5	40 27 16.43	+ 9 5.44	+1.17	+ 20	+20	23.44	—2	31.5
	III 1	R	24.3617	15.2380	— 11	+ .9	+1.9	40 40 13.50	— 3 50.45	— 37	+ 39	— 7	23.00	+7	35.6
	2		33.9073iv	6.1720ii	0	— .6	— .2	40 24 40.36	+11 40.64	+1.44	— 12	+21	22.53	+7	
	3		12.2327	24.1467	—126	— .1	+ .4	40 41 24.11	— 5 0.65	— 49	+ 4	— 9	22.92	+7	35.1
	4		14.7793	27.3823	+ 81	+ .4	0	40 41 41.01	— 5 18.57	— 53	+ 6	— 9	21.88	+7	
	5		23.8980	19.0797	+ 42	+ .3	— .6	40 38 25.02	— 2 1.82	— 16	— 3	— 4	22.97	+7	
	6		13.9507	28.8090	+122	+ .5	+ .1	40 42 39.95	— 6 15.65	— 57	+ 10	—14	23.69	+6	34.7
	7		23.2857	16.4833	— 4	— .1	+ .2	40 39 15.08	— 2 51.83	— 26	+ 1	— 5	22.95	+7	
	8		16.3140	27.7880	+138	— .2	— .3	40 41 13.90	— 4 50.20	— 46	— 7	—10	23.07	+6	34.1
	9		26.7163	16.0470	+ 89	— .2	— .6	40 31 52.35	+ 4 29.75	+ 60	— 11	+10	22.69	+6	
Dec. 13	10		30.5400iv	9.8947ii	0	— .2	— .6	40 27 40.09	+ 8 41.53	+1.08	— 11	+15	22.74	+6	33.9
	1	D	15.6900	24.7970	+ 14	+ .7	+ .4	40 40 13.47	— 3 50.13	— 37	+ 16	— 7	23.06	+7	18.1
	2		3.8957ii	31.6513iv	—101	+1.3	+1.9	40 24 40.32	+11 40.98	+1.44	+ 46	+21	23.41	+7	
	3		26.2090	14.2867	+ 16	+1.3	+1.8	40 41 24.09	— 5 1.25	— 49	+ 44	— 9	22.70	+7	
	4		26.8303	14.2760	+ 39	+ .6	— .1	40 41 41.01	— 5 17.29	— 53	+ 8	— 9	23.18	+7	18.3
	5		17.9203	22.7453	+ 11	+ .6	+1.0	40 38 25.05	— 2 1.93	— 16	+ 22	— 4	23.14	+7	
	6		26.1287	11.2087	—118	+1.3	+1.9	40 42 39.99	— 6 16.66	— 57	+ 46	—14	23.08	+6	18.0
	7		17.8160	24.6123	+ 48	+ .3	+1.3	40 39 15.12	— 2 51.83	— 26	+ 22	— 5	23.20	+7	
	8		26.5167	15.0230	+ 52	+1.9	+2.1	40 41 13.96	— 4 50.52	— 46	+ 58	—10	23.46	+6	
	9		14.1590	24.8543	— 31	+ .8	— .2	40 31 52.42	+ 4 30.14	+ 60	+ 10	+10	23.36	+6	
	10		8.9130ii	29.5737iv	0	+ .5	— .4	40 27 40.18	+ 8 41.99	+1.08	+ 3	+15	23.43	+6	17.5
	V 7	R	12.7557	27.7977	+ 23	+2.2	— .4	40 42 44.68	— 6 20.09	— 63	+ 30	—13	24.13	0	15.6
	8		18.1977	22.5723	+ 12	—2.1	—1.6	40 34 33.03	+ 1 50.55	+ 29	— 55	+ 4	23.36	0	
	9		13.7100	27.6977	+ 57	—4.0	—2.4	40 42 18.51	— 5 53.54	— 60	— 96	—10	23.31	0	17.2
	10		22.5110	19.2193	+ 16	+1.0	— .2	40 37 46.88	— 1 23.21	— 9	+ 14	— 3	23.69	—1	
	VI 1		25.7257	17.2580	+ 74	— .6	— .4	40 32 47.82	+ 3 34.12	+ 47	— 14	+ 7	22.34	—1	
	2		16.8790	23.8333	+ 15	—2.0	— .9	40 33 28.05	+ 2 55.74	+ 39	— 44	+ 5	23.79	—1	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½ (δ + δ′)	Corrections: Micrometer	Corrections: δ	Corrections: l	Corrections: r	Latitude	Δ	Ther.
Dec.								° ′ ″					° ′ ″		
13	III 4	D	17.9490	24.5583	+ 49	—1.8	—1.2	40 33 37.87	+ 2 47.10	+ 37	— 44	+ 5	40 36 24.95	—2	17.0
	5		17.3163iv	23.5140iv	—310	+ .2	+ .1	40 38 34.21	— 2 10 54	— 17	+ 4	— 4	23.50	—2	
Dec.	6		32.3253iv	10.7230ii	+ 14	—1.1	— .6	40 27 16.65	+ 9 5.81	+1.17	— 26	+20	23.57	—2	16.6
17	III 1	R	24.1183	15.0483	— 23	— .3	—2.4	40 40 13.19	— 3 49.05	— 37	— 36	— 7	23.34	+7	
Dec. 20	III 1	R	23.7703	14.6727	— 42	+1.4	+ .1	40 40 13.09	— 3 49.73	— 37	+ 24	— 7	23.16	+7	28.0
	2		33.6097iv	5.8403ii	— 12	+ .7	+1.4	40 24 40.01	+11 41.51	+1.44	+ 30	+21	23.47	+7	
	3		14.8150	26.6960	+ 53	+1.1	+ .6	40 41 23.86	— 5 0.28	— 49	+ 26	— 9	23.26	+7	
	4		14.2567	26.7870	+ 38	— .3	— .6	40 41 40.86	— 5 16.65	— 53	— 13	— 9	23.46	+7	27.4
	5		23.5090	18.6880	+ 32	— .8	—1.2	40 38 25.02	— 2 1.88	— 16	— 28	— 4	22.66	+6	27.3
	6		14.2557	29.1213	+145	— .2	— .3	40 42 40.07	— 6 15.92	— 57	— 7	—14	23.37	+6	
	7		23.3470	16.5733	— 2	—1.0	— .5	40 39 15.24	— 2 51.11	— 26	— 22	— 5	23.60	+7	
	8		14.8080	26.2570	+ 35	—1.1	—1.1	40 41 14.19	— 4 49.33	— 46	— 32	—10	23.98	+6	27.1
	9		26.9393	16.2470	+100	—1.8	— .9	40 31 52.68	+ 4 30.38	+ 60	— 40	+10	23.36	+6	
	10		31.1037iv	10.4560ii	+ 3	—2.6	—1.4	40 27 40.47	+ 8 41.63	+1.08	— 60	+15	22.73	+6	26.4
	V 7	D	26.8353	11.7283	— 63	+2.1	+ .1	40 42 45.30	— 6 21.49	— 63	+ 36	—13	23.41	+1	26.2
	8		22.1543	17.8253	0	— .8	0	40 34 33.61	+ 1 49.36	+ 28	— 13	+ 4	23.16	0	
	9		27.3103	13.2810	+ 22	+ .2	— .9	40 42 19.15	— 5 54.48	— 60	— 8	—10	23.89	0	
	10		17.5857	20.9257	— 15	+1.4	+ .1	40 37 47.45	— 1 24.34	— 9	+ 24	— 3	23.23	0	
	VI 1		15.6803	24.1877	0	— .6	—1.1	40 32 48.36	+ 3 34.92	+ 47	— 24	+ 7	23.58	—1	26.2
	2		23.4403	16.5520	0	—1.1	—1.0	40 33 28.55	+ 2 54.02	+ 38	— 30	+ 5	22.70	—1	
	3		27.8060	11.8413	— 16	—1.0	— .4	40 43 7.76	— 6 43.27	— 68	— 21	—12	23.48	—1	26.0
	4		23.4853	16.9740	+ 9	0	+ .5	40 33 38.28	+ 2 44.52	+ 37	+ 6	+ 5	23.28	—2	25.6
	5		20.6853	15.5013	— 58	— .7	—1.8	40 38 34.57	— 2 10.82	— 17	— 35	— 4	23.19	—2	
Dec.	6		7.9370ii	29.5147iv	— 11	— .1	—1.0	40 27 16.92	+ 9 5.09	+1.17	— 14	+20	23.24	—2	25.6
23	III 1	D	16.3233	25.4327	+ 47	+2.5	+2.7	40 40 12.97	— 3 50.22	— 37	+ 75	— 7	23.06	+7	44.3
	2		5.3713ii	33.1177iv	— 37	+1.5	+2.2	40 24 39.97	+11 40.78	+1.44	+ 52	+21	22.92	+6	
	3		25.7470	13.8287	— 15	+1.8	+2.5	40 41 23.86	— 5 1.01	— 49	+ 62	— 9	22.89	+6	
	4		25.2740	12.6603	— 77	— .1	+ .2	40 41 40.88	— 5 18.42	— 53	+ 1	— 9	21.85	+7	43.9
	5		16.9263	21.7923	— 18	+1.4	+1.2	40 38 25.12	— 2 2.87	— 16	+ 38	— 4	22.43	+6	
	6		26.2500	11.2993	—106	+1.2	+2.1	40 42 40.23	— 6 17.38	— 58	+ 47	—14	22.60	+6	
	7		17.0940	23.9110	+ 21	+ .3	+ .5	40 39 15.40	— 2 52.25	— 26	+ 12	— 5	22.96	+7	42.6
	9		12.4247	23.0953	—143	+ .3	+ .5	40 31 52.91	+ 4 29.17	+ 60	+ 12	+10	22.90	+6	
Dec.	10		9.7820ii	30.3983iv	0	+ .9	0	40 27 40.70	+ 8 40.76	+1.08	+ 14	+15	22.83	+6	43.3
24	III 1	R	24.8353	15.7573	+ 18	0	— .7	40 40 12.94	— 3 49.35	— 37	— 9	— 7	23.06	+7	43.5
	2		33.6073iv	5.8253ii	— 12	—1.8	— .4	40 24 39.95	+11 41.74	+1.44	— 34	+21	23.00	+6	
	3		14.8813	26.7197	+ 57	—3.0	—4.3	40 41 23.86	— 4 59.18	— 49	—1.04	— 9	23.06	+6	
	4		14.4547	26.9967	+ 54	+ .2	— .5	40 41 40.89	— 5 16.95	— 53	— 4	— 9	23.28	+7	43.2
	5		23.7753	18.9713	+ 40	—1.2	—2.3	40 38 25.14	— 2 1.45	— 16	— 50	— 4	22.99	+6	
	6		14.3063	29.1707	+149	— .2	0	40 42 40.27	— 6 15.86	— 57	— 3	—14	23.67	+6	42.2
	7		24.1877	17.3863	+ 33	+ .9	+ .4	40 39 15.45	— 2 51.88	— 26	+ 20	— 5	23.46	+7	
	8		15.1530	26.6437	+ 62	— .6	— .2	40 41 14.46	— 4 50.41	— 46	— 12	—10	23.37	+6	
	9		26.4000	15.7607	+ 67	— .1	0	40 31 53.00	+ 4 28.91	+ 60	— 2	+10	22.59	+6	
	10		31.1050iv	10.4520ii	0	—1.6	—1.5	40 27 40.77	+ 8 41.70	+1.08	— 46	+15	23.24	+6	42.0
	V 7	R	12.3100	27.4207	— 12	+2.9	— .7	40 42 45.75	— 6 21.66	— 63	+ 38	—13	23.71	+1	43.4
	8		19.3173	23.5993	+ 37	+1.1	— .3	40 34 34.03	+ 1 48.26	+ 28	+ 14	+ 4	22.75	0	
	9		14.2723	28.3573	+110	+ .4	+ .8	40 42 19.60	— 5 56.07	— 60	+ 17	—10	23.00	0	
	10		23.2217	19.8653	+ 31	— .8	+2.7	40 37 47.87	— 1 24.86	— 9	+ 22	— 3	23.11	0	
	VI 1		25.1407	16.6877	+ 46	+ .2	+ .1	40 32 48.74	+ 3 33.64	+ 47	+ 4	+ 7	22.96	0	44.0
	2		17.3830	24.2353	+ 31	+ .5	+1.2	40 33 28.97	+ 2 53.17	+ 38	+ 24	+ 5	22.81	—1	
	3		12.0543	28.0690	+ 5	+1.0	+1.1	40 43 8.04	— 6 44.54	— 68	+ 30	—12	23.00	—1	
	4		17.7723	24.2717	+ 40	0	+1.1	40 33 38.57	+ 2 44.27	+ 37	+ 14	+ 5	23.40	—2	
	5		18.2770	23.4760	+ 27	— .3	— .3	40 38 34.82	— 2 11.39	— 18	— 9	— 4	23.12	—2	
Dec.	6		32.2200iv	10.6517ii	+ 13	+ .7	+ .4	40 27 17.12	+ 9 4.84	+1.17	+ 16	+20	23.49	—2	43.7
25	III 1	D	16.1103	25.2030	+ 35	+1.4	+1.3	40 40 12.88	— 3 49.75	— 37	+ 40	— 7	23.09	+6	52.4
	2		4.7813ii	32.5257iv	— 61	+ .8	+1.2	40 24 39.91	+11 40.63	+1.44	+ .28	+21	22.47	+6	

1893	Pair	P	Micrometer		C	Levels A	Levels B	½(δ + δ′)	Corrections Micrometer	Corrections δ	Corrections l	Corrections r	Latitude	Δ	Ther.
								° ′ ″					° ′ ″		
Dec. 25	III 3	D	24.5020	12.5593	−104	+ .7	+ .7	40 41 23.82	− 5 1.40	− 49	+ 20	− 9	40 36 22.04	+6	
	4		25.4063	12.8047	− 67	+1.8	+2.0	40 41 40.87	− 5 18.13	− 53	+ 55	− 9	22.67	+7	52.0
	5		17.4017	22.2273	− 6	− .6	− .7	40 38 25.18	− 2 1.87	− 16	− 18	− 4	22.93	+6	
	6		24.8773	9.9337	−228	+1.4	+ .9	40 42 40.31	− 6 16.87	− 57	+ 34	−14	23.07	+5	51.8
	7		16.4333	23.2703	− 6	+ .2	+ .4	40 39 15.49	− 2 52.68	− 26	+ 8	− 5	22.58	+6	51.5
	8		24.9827	13.4460	− 53	+1.2	+ .7	40 41 14.53	− 4 51.27	− 46	+ 28	−10	22.98	+6	
	9		13.7100	24.3703	− 62	+1.1	+1.0	40 31 53.06	+ 4 29.11	+ 60	+ 30	+10	23.17	+5	
	10		9.4783ii	30.1137iv	0	+ .5	0	40 27 40.84	+ 8 41.22	+1.08	+ 8	+15	23.37	+6	50.8
	V 7		26.5737	11.4430	− 87	+ .9	+ .2	40 42 45.90	− 6 21.96	− 63	+ 17	−13	23.35	+1	50.2
	8		21.9587	17.6617	− 5	− .3	−1.8	40 34 34.17	+ 1 48.53	+ 28	− 28	+ 4	22.74	+1	
	9		26.9063	12.8427	− 12	− .6	+ .4	40 42 19.75	− 5 55.19	− 60	− 4	−10	23.82	0	
	10		16.4607	19.8190	− 37	+1.4	+ .4	40 37 48.01	− 1 24.74	− 9	+ 28	− 3	23.43	0	
	VI 1		15.6313	24.0823	− 8	+ .2	+ .7	40 32 48.87	+ 3 33.44	+ 47	+ 12	+ 7	22.97	0	49.2
	2		23.1593	16.3090	− 12	+1.3	+3.2	40 33 29.10	+ 2 53.00	+ 38	+ 62	+ 5	23.15	−1	
	3		27.1517	11.1357	− 79	+ .4	+1.4	40 43 8.22	− 6 44.34	− 68	+ 24	−12	23.32	−1	49.7
Dec. 26	III 1	R	24.0003	14.9100	− 30	+2.0	+1.7	40 40 12.80	− 3 49.57	− 37	+ 54	− 7	23.33	+6	28.7
	2		33.8933iv	6.1453ii	0	+1.3	+1.7	40 24 39.84	+11 41.00	+1.44	+ 43	+21	22.92	+6	28.4
	3		16.9753	28.8497	+204	+1.8	+1.8	40 41 23.78	− 5 0.50	− 49	+ 52	−10	23.21	+6	28.2
	4		14.0523	26.5877	+ 25	+ .7	+ .8	40 41 40.84	− 5 16.74	− 53	+ 22	− 9	23.70	+7	
	5		23.5933	18.7430	+ 34	+1.9	+2.1	40 38 25.15	− 2 2.62	− 16	+ 58	− 4	22.91	+6	
	6		14.1067	28.9797	+133	+ .8	+1.2	40 42 40.32	− 6 16.07	− 57	+ 28	−14	23.82	+5	
	7		23.7340	16.9140	+ 14	+2.0	+1.2	40 39 15.50	− 2 52.33	− 26	+ 48	− 5	23.34	+6	27.9
	8		15.5997	27.1217	+ 92	+2.2	+2.6	40 41 14.56	− 4 51.31	− 46	+ 70	−10	23.39	+6	
	9		27.2557	16.6220	+122	+2.0	+2.9	40 31 53.11	+ 4 28.94	+ 60	+ 70	+10	23.45	+5	
	10		30.3373iv	9.7530ii	0	+1.9	+1.9	40 27 40.90	+ 8 40.02	+1.08	+ 55	+15	22.70	+6	27.1
	V 7	R	15.3253	30.4460	+258	0	− .1	40 42 46.04	− 6 22 65	− 63	− 2	−13	22.61	+1	25.9
	8		18.3097	22.6047	+ 13	−3.7	−3.5	40 34 34.32	+ 1 48.53	+ 28	−1.05	+ 4	22.12	+1	
	9		12.2753	26.4207	− 56	0	+ .8	40 42 19.91	− 5 57.22	− 61	+ 10	−10	22.08	0	
	10		21.9867	18.6630	+ 8	− .2	+ .7	40 37 48.16	− 1 23.99	− 9	+ 6	− 3	24.11	0	
	VI 1		24.2400	15.7913	0	+ .8	+1.8	40 32 49.01	+ 3 33.44	+ 47	+ 36	+ 7	23.35	0	
	2		17.2930	24.1723	+ 28	− .6	− .3	40 33 29.25	+ 2 53.86	+ 38	− 14	+ 5	23.40	−1	25.3
	3		13.4787	29.4697	+137	−1.3	+1.4	40 43 8.36	− 6 44.32	− 68	− 3	−12	23.21	−1	
	4		18.3983	24.8930	+ 63	+1.0	+1.3	40 33 38.81	+ 2 44.23	+ 37	+ 33	+ 5	23.79	−2	
	5		18.6083	23.8270	+ 37	+1.3	+1.2	40 38 35.04	− 2 11.94	− 18	+ 36	− 4	23.24	−2	
	6		32.3593iv	10.8103ii	+ 15	+1.7	+1.1	40 27 17.32	+ 9 4 43	+1.17	+ 42	+20	23.54	−2	25.1
Dec. 27	V 7	D	27.1410	11.9863	− 40	+2.5	+ .5	40 42 46.18	− 6 22.73	− 63	+ 47	−13	23.16	+1	32.8
	8		21.3270	17.0340	− 24	−1.5	− .2	40 34 34.46	+ 1 48.39	+ 28	− 26	+ 4	22.91	+1	
	9		27.6547	13.5623	+ 52	+ .9	+1.0	40 42 20.06	− 5 56.13	− 61	+ 28	−10	23.50	0	
	10		18.0277	21.4313	− 7	+4.1	+1.5	40 37 48.30	− 1 25.97	− 9	+ 86	− 3	23.07	0	32.6
	VI 1		15.8017	24.2570	0	+ .2	− .4	40 32 49.15	+ 3 33.60	+ 47	− 2	+ 7	23.27	0	
	2		24.3893	17.5337	+ 38	− .6	− .6	40 33 29.39	+ 2 53.29	+ 38	− 18	+ 5	22.93	−1	
	3		28.2307	12.2367	+ 23	− .6	0	40 43 8.49	− 6 44.10	− 68	− 10	−12	23.49	−1	32.4
	5		22.4663	17.2300	− 5	− .9	− .5	40 38 35.16	− 2 12.26	− 18	− 21	− 4	22.47	−2	32.1
	6		8.2587ii	29.8127iv	− 9	− .5	− .9	40 27 17.42	+ 9 4.48	+1.17	− 20	+20	23.07	−2	32.4

The Constant of Aberration.

The present series appears to be much better adapted to an investigation of the aberration constant than that of 1889–90. The period covered is from October 10, 1892, to December 27, 1893—443 days. Hence if we assume, in accordance with Chandler's conclusion, that the latitude variation may be represented by two periodic terms of 12 and 14 months respectively, this series will embrace something more than the full term of 14 months. The investigation of this constant formed an important part of the original plan. To this end as many observations as possible were obtained in the morning and evening when the effect of aberration was near the maximum.

The distribution in Right Ascension of the 107 pairs of stars was as follows:

h h		h h		h h		h h	
0–1	4 Pairs.	6– 7	4 Pairs.	12–13	5 Pairs.	18–19	5 Pairs.
1–2	4 "	7– 8	6 "	13–14	3 "	19–20	5 "
2–3	4 "	8– 9	5 "	14–15	5 "	20–21	5 "
3–4	4 "	9–10	4 "	15–16	5 "	21–22	4 "
4–5	5 "	10–11	4 "	16–17	4 "	22–23	5 "
5–6	5 "	11–12	4 "	17–18	4 "	23–24	4 "

There were in all 1780 observations before midnight and 1120 after midnight.

We may then write for each observation an equation of the form

$$\varphi_0 + \Delta + \alpha x + \beta y + \gamma z + \delta u + \varepsilon v + \tau w = \phi,$$

where ϕ_0 is an assumed value of the latitude,

Δ a constant correction to ϕ_0,

$\alpha x + \beta y$ terms depending upon the 14 months period,

$\gamma z + \delta u$ terms depending upon the annual period,

εv correction required on account of erroneous aberration,

τw secular change in the latitude.

The longer period was assumed to be 430 days as indicated by the interval from maximum to maximum and minimum to minimum of this series in connection with that of 1889–90. The daily change of the argument is therefore 0°.837.

Let n be the number of days from January 1, 1893,

$N = 0°.837n$,

$\odot =$ the sun's true longitude,

Then

$$\alpha = \cos N, \qquad \beta = \sin N,$$
$$\gamma = \cos \odot, \qquad \delta = \sin \odot.$$

Referring to the American Ephemeris, the reduction for aberration is

$$Cc' + Dd'.$$

Let us call this quantity k, and write for C, D, c', d' their values,
Then

$$k = 20''.4451\ [-\cos\omega\cos\odot\ (\text{tau}\ \omega\cos\delta - \sin\alpha\sin\delta) - \sin\odot\cos\alpha\sin\delta],$$

20″.4451 being Struve's value of the aberration constant.

Let v be the correction which this constant requires to satisfy the present series, Δk the corresponding correction to k,
Then

$$\frac{20.4451}{20.4451 + v} = \frac{k}{k + \Delta k}, \text{ from which } \Delta k = \frac{k}{20.4451}\, v.$$

e of our equation therefore equals

$$\frac{k}{20.4451}.$$

It will be convenient to modify this expression as follows:

$$\Delta k = \frac{k}{20}, \frac{20}{20.4451}\, v = \frac{k}{20}\, v'. \quad \text{Where } v' = \frac{20}{20.4451}\, v,$$

v' will be the unknown quantity of our equation.

From a morning and evening observation on any pair, which observations will be separated by an interval of several months, we have a pair of equations,

$$\phi_0 + \Delta + \alpha' x + \beta' y + \gamma' z + \delta' u + \varepsilon' v' + \tau' w = \phi'$$
$$\phi_0 + \Delta + \alpha'' x + \beta'' y + \gamma'' z + \delta'' u + \varepsilon'' v' + \tau'' w = \phi''$$

By subtraction

$$(\alpha' - \alpha'')\, x + (\beta' - \beta'')\, y + (\gamma' - \gamma'')\, z + (\delta' - \delta'')\, u + (\varepsilon' - \varepsilon'')\, v + (\tau' - \tau'')\, w = \phi' - \phi''.$$

For the purpose of illustrating the method of forming these equations the data for one pair of stars will be given in full, viz.:

				h	m	s		°	′	″
B, A, C	16	Mag	4.9	α	0	4	43	δ	45	29	15
L L	220		7.5		0	11	4		35	53	25

Difference of zenith distance approximately 10′.

Date			x	y	z	u	ρ	η	Observed ϕ
									//
1892 December	2	1	+0.911	−0.411	−0.324	−0.946	+0.721	−0.076	3.18
	3	2	+ .918	− .397	− .307	− .952	+ .720	− .074	2.91
	5	3	+ .928	− .371	− .274	− .962	+ .717	− .068	3.00
	10	4	+ .953	− .302	− .189	− .982	+ .705	− .055	2.84
P.M.	12	5	+ .962	− .274	− .155	−0.988	+ .699	− .049	3.16
	20	6	+ .987	− .160	− .012	−1.000	+ .665	− .028	3.04
	23	7	+ .993	− .117	+ .042	−0.999	+ .650	− .019	3.13
	26	8	+ .997	− .073	+ .096	− .995	+ .632	− .011	3.12
	27	9	+0.998	−0.058	+0.113	−0.994	+0.625	−0.008	2.67
1893 July	19	10	−0.976	+0.218	−0.457	+0.889	−0.453	+0.551	3.75
	23	11	−0.987	+ .162	− .515	+ .857	− .414	+ .562	3.50
August	2	12	−1.000	+ .016	− .649	+ .760	− .310	+ .589	2.85
	5	13	−1.000	− .028	− .687	+ .727	− .277	+ .597	3.02
A.M.	6	14	−0.999	− .044	− .700	+ .714	− .266	+ .600	3.30
	7	15	− .998	− .058	− .711	+ .703	− .255	+ .603	2.89
	8	16	− .997	− .071	− .723	+ .691	− .244	+ .605	3.67
	9	17	− .996	− .087	− .735	+ .678	− .232	+ .608	3.25
	10	18	−0.995	−0.101	−0.747	+0.665	−0.220	+0.611	3.85
1893 October	31	19	−0.269	−0.963	−0.783	−0.622	+0.641	+0.835	3.48
November	6	20	− .182	− .983	− .712	− .705	+ .672	+ .852	3.65
	10	21	− .125	− .992	− .661	− .750	+ .689	+ .863	3.68
	11	22	− .110	− .994	− .648	− .762	+ .693	+ .865	3.72
	15	23	− .096	− .995	− .593	− .805	+ .705	+ .876	3.38
	16	24	− .038	− .999	− .579	− .815	+ .708	+ .879	3.39
P.M.	26	25	+ .108	− .994	− .427	− .904	+ .723	+ .906	3.18
	30	26	+ .167	− .986	− .362	− .932	+ .722	+ .918	3.57
December	4	27	+ .223	− .975	− .296	− .953	+ .719	+ .928	3.03
	6	28	+ .252	− .968	− .260	− .965	+ .715	+ .934	3.58
	7	29	+ .266	− .964	− .244	− .970	+ .713	+ .937	2.91
	10	30	+ .307	− .952	− .192	− .981	+ .706	+ .945	2.73
	13	31	+ .349	− .937	− .139	−0.990	+ .696	+ .953	3.18
	20	32	+ .443	− .896	− .016	−1.000	+ .667	+ .972	3.46
	24	33	+ .494	− .870	+ .054	−0.998	+ .645	+ .983	3.28
	25	34	+ .507	− .862	+ .071	− .997	+ .639	+ .986	2.67
	26	35	+0.520	−0.854	+0.091	−0.996	+0.633	+0.989	3.70
These are now combined by subtraction as follows:									$\sqrt{p}$
	10− 1		−1.887	+0.629	−0.133	+1.835	−1.174	+0.627	+0.57	0.64
	11− 2		− .905	+ .559	− .208	+ .809	−1.134	+ .636	+ .59	.64
	12− 3		− .928	+ .387	− .375	+ .722	−1.027	+ .657	− .15	.64
	13− 4		− .953	+ .274	− .498	+ .709	−0.982	+ .652	+ .18	.64
	14− 5		− .961	+ .230	− .545	+ .702	− .965	+ .649	+ .14	.64
	15− 6		− .985	+ .102	− .699	+ .703	− .920	+ .631	− .15	.64
	16− 7		− .990	+ .046	− .765	+ .690	− .894	+ .624	+ .54	.64
	17− 8		− .993	− .014	− .831	+ .673	− .864	+ .619	+ .13	.64
	18− 9		−1.993	−0.043	−0.860	+1.659	−0.845	+0.619	+1.18	0.64
	19 , 20—10		+0.751	−1.191	−0.290	−1.553	+1.109	+0.293	−0.19	0.72
	21 , 22—11		+ .870	−1.155	− .140	− .613	+1.105	+ .302	+ .20	.72
	23 , 24—12		+0.933	−1.013	+ .063	− .570	+1.016	+ .289	+ .53	.72
	25 , 26—13		+1.137	−0.962	+ .292	− .645	+0.999	+ .315	+ .36	.72
	27 , 28—14		+ .236	− .927	+ .423	− .674	+ .983	+ .331	− .00	.72
	29 , 30—15		+ .284	− .900	+ .493	− .679	+ .966	+ .337	− .07	.72
	31 , 32—16		+ .393	− .845	+ .645	− .686	+ .925	+ .357	− .35	.72
	33 , 34—17		+ .496	− .779	+ .797	− .675	+ .874	+ .376	− .27	.72
	35—18		+1.515	−0.753	+0.838	−1.661	+0.853	+0.378	− .15	0.64

The following system was adopted in the assignment of weights.

Each evening or morning equation was given the weight unity where the difference of zenith distance was less than 15 revolutions of the screw (12′.6).

In case of pairs whose difference of zenith distance was 15 or more revolutions the weight ½ was assigned.

As appears from the example, one morning observation may be combined with the mean of two or more evening observations or *vice versa*. Also the same morning or evening observation may enter into more than one combination; thus the morning series above is combined with each of the two evening series.

p_1 and p_2 being the weights of the two equations, that of the difference equation is

$$\frac{p_1 p_2}{p_1 + p_2}$$

When the same observation equation enters into two combinations it is given in each the weight $0.7p$.

When two equations are combined into a single mean it is given weight $2p$.

When three or more equations are so combined the weight is $3p$.

In this manner were formed 1219 difference equations. When these resulted from observations made within an interval of a few days, their coefficients were so nearly equal that frequently it was advantageous to combine several difference equations into one. This was done by the simple process of addition, as shown by the following example:

	$-1.09x$	$+1.65y$	$+1.15z$	$+1.35u$	$-1.42v'$	$+0.65w$	$=+0.''27$	$\sqrt{p}=0.64$
	-1.17	$+1.60$	$+1.10$	$+1.43$	-1.40	$+0.64$	-0.19	0.64
	-1.20	$+1.58$	$+1.06$	$+1.46$	-1.39	$+0.63$	$+0.32$	0.64
	-1.05	$+1.66$	$+1.16$	$+1.30$	-1.26	$+0.66$	$+0.15$	0.76
	-1.11	$+1.63$	$+1.12$	$+1.35$	-1.25	$+0.65$	$+0.34$	0.64
Σ	$-5.62x$	$+8.12y$	$+5.59z$	$+6.89u$	$-6.72v'$	$+3.23w$	$=+0.89$	$\sqrt{p}=0.305$
	$-1.71x$	$+2.48y$	$+1.70z$	$+2.10u$	$-2.05v'$	$+0.99w$	$=+0.27$	

The final equation is the summation equation multiplied by the square root of its weight. The latter is derived as follows:

Let $p_1 \cdot p_2 \ldots . p_n$ be the weights of the individual equations, the weight of the sum is

$$\frac{(p_1 \cdot p_2 \ldots . p_n)}{(p_2 \cdot p_3 \ldots . p_n) + (p_1 \cdot p_3 \ldots . p_n) + \ldots + (p_1 \ldots . p_{n-1} \cdot p_n)}$$

By tabulating the terms of this formula for the values of p which actually occurred the weights were readily computed.

By this process of combining, the number of equations was reduced to 190. These were then combined in the usual manner to form the six normal equations which follow:

$$\begin{aligned}
697.1376x - 82.5669y + 239.3309z - 619.6463u + 74.3262v' - 198.3408w &= -32.0961 \\
+ 664.8606y + 544.5932z + 408.5788u - 99.2513v' - 34.9435w &= -76.1616 \\
+ 639.9110z + 53.0980u - 32.9367v' - 63.8902w &= -84.4461 \\
+ 757.0544u - 112.3893v' + 107.7806w &= -12.3723 \\
+ 426.7316v' + 1.4786w &= -35.2360 \\
+ 126.1514w &= +13.5975
\end{aligned}$$

From which

$$x = -.1119 \pm 1255$$
$$y = -.1090 \pm 0587$$
$$z = -.0029 \pm 0723$$
$$u = -.0572 \pm 0642$$
$$v' = -.1036 \pm 0092$$
$$w = -.0497 \pm 0919$$

The probable error of a single equation of weight unity is $\pm$ 0″.182.

It was obvious from the beginning that the 12 and 14 months terms could not be separated with any certainty in a series of this character, but it was thought best to include both for the sake of completeness. The indetermination is shown very conspicuously by the large probable errors of x, y, z and u. This however does not extend to v', the probable error of which is quite small.

Remembering the significance of v' we have for the correction to Struve's value of the aberration constant

$$\frac{20.4451}{20} v' = .1059$$

Struve's value	20.4451
Resulting value of constant	**20″.551 ± 0094**

A second solution of the normal equations, excluding the terms depending on the annual period, gives

$$x = -.0563 \pm 0097$$
$$y = -.1381 \pm 0074$$
$$v' = -.1048 \pm 0090$$
$$w = -.0177 \pm 0227$$

Correction to Struve's constant	= + .1071
Value of constant	**20″.552 ± 0092**

Finally, if we exclude from our equations every unknown quantity except v' we find

Correction = .0844
Constant **20″.530**

If the latitude variation can be represented by a single periodic term, and the observations were distributed uniformly throughout a full period, both with respect to the right ascensions of the stars employed and the date of observations, we should expect the last two values to be practically equal.

The value 20″.551 is that adopted in the reduction of the present series. The necessary correction to the latitude is found by multiplying the computed reduction for aberration by the factor .00518. This correction is applied to the individual values of the latitude before beginning the process of adjustment which follows.

Adjustment of the Latitude.

The corrections necessary to reduce the separate values of the latitude to the mean of the groups were derived in the usual manner and are as follows:

Group	Pairs											
	1	2	3	4	5	6	7	8	9	10	11	12
I	+ 6	+ 11	— 9	— 7	— 20	+ 10	+ 37	— 11	— 14	— 3		
II	— 13	+ 3	— 1	+ 40	+ 11	— 7	+ 7	— 35	— 5			
III	+ 4	+ 15	+ 21	+ 1	+ 10	— 24	— 3	— 27	+ 1	+ 2		
IV	— 21	— 9	+ 26	+ 7	+ 13	+ 3	+ 36	— 14	— 23	— 18		
V	+ 13	+ 13	— 14	— 5	— 51	+ 21	+ 16	+ 17	— 3	— 7		
VI	— 22	+ 5	— 27	+ 5	+ 12	— 2	+ 5	+ 7	+ 13	+ 3	— 10	+ 11
VII	— 6	+ 5	— 26	+ 13	— 6	+ 28	+ 24	— 6	— 26	— 0		
VIII	— 7	— 7	— 24	— 8	— 7	+ 12	+ 22	+ 18	— 7	+ 4	+ 4	
IX	+ 18	— 21	— 20	+ 11	+ 5	+ 10	— 3					
X	+ 41	— 36	— 30	+ 33	— 0	— 1	— 7	— 4	— 12	+ 16		
XI	+ 6	+ 2	— 0	— 42	— 31	+ 21	+ 12	+ 32				

Final Adjustment.

The foregoing corrections are applied where necessary to the individual latitudes, and the means for each group formed for convenient intervals, averaging for this series 23 days, we have the following values:

	I	No.	II	No.	III	No.	IV	No.	V	No.	VI	No.	VII	No.	VIII	No.	IX	No.	X	No.	XI	No.
1892	"		"		"		"		"		"		"		"		"		"		"	
Oct. 10–Oct. 24	3.350	53	3.328	15					3.117	56	3.256	39										
Oct. 30–Nov. 26	3.269	27	3.066	46					3.065	4	3.240	38	3.149	25	2.390	2						
Dec. 1–Dec. 23			2.879	37	3.111	70							3.210	40	3.016	25						
Dec. 25–Jan. 20					3.162	38	3.134	49							2.970	49	2.648	14				
1893																						
Jan. 21–Feb. 16							3.040	56	3.011	67							2.892	32	3.040	21		
Feb. 20–Mar. 17									2.956	45	3.011	73					2.939	12	2.966	40		
Mar. 18–Apr. 18											3.058	58	2.991	62					2.982	34	2.966	25
Apr. 23–May 7	2.765	8											2.895	25	2.916	43					2.955	27
May 8–June 7	3.157	18													2.961	61	2.948	42			3.149	16
June 8–June 30	3.094	57	2.922	22													2.914	42	3.069	65	3.270	7
July 2–July 27	3.167	26	3.006	57	3.344	21													3.141	78	3.158	58
July 29–Aug. 10	3.100	47			3.282	67															3.186	42
Sept. 2–Sept. 23	3.223	62					3.210	67	3.128	17											3.324	50
Sept. 27–Oct. 24	3.289	99	3.179	77					3.255	70												
Oct. 25–Nov. 16			3.205	62	3.456	59					3.337	104										
Nov. 26–Dec. 6			3.119	31	3.329	40			3.066	8	3.344	7										
Dec. 7–Dec. 27					3.169	90			3.312	32	3.248	42										

In what follows, the differences of the consecutive values of the latitude are given with the weight given by the expression

$$p = \frac{nn'}{10\,(n+n')}$$

When two or more differences are combined the value of p given is the sum of the individual weights. The primed values of I–II, etc., refer to the morning series.

			p	$1-p$
I-	II	+ .129	2.87	.3484
II-	III	— .232	2.42	.4132
III-	IV	+ .028	2.14	.4673
IV-	V	+ .029	3.05	.3279
V-	VI	— .055	2.78	.3597
VI-	VII	+ .067	3.00	.3333
VII-	VIII	— .021	1.58	.6329
VIII-	IX	+ .013	2.49	.4016
IX-	X	— .155	2.55	.3922
X-	XI	— .046	3.96	.2525
XI-	I	+ .076	8.88	.1126

			p	$1-p$
I-	II′	+ .166	3.38	.2959
II-	III′	— .338	1.53	.6536
IV-	V′	+ .082	1.36	.7353
V-	VI′	— .144	2.66	.3759
VI-	VII′	+ .091	1.51	.6623
VII-	VIII′	+ .256	1.73	.5780
VIII-	IX′	+ .322	1.09	.9174
IX-	X′	— .098	2.21	.4525
X-	XI′	+ .016	1.44	.6944

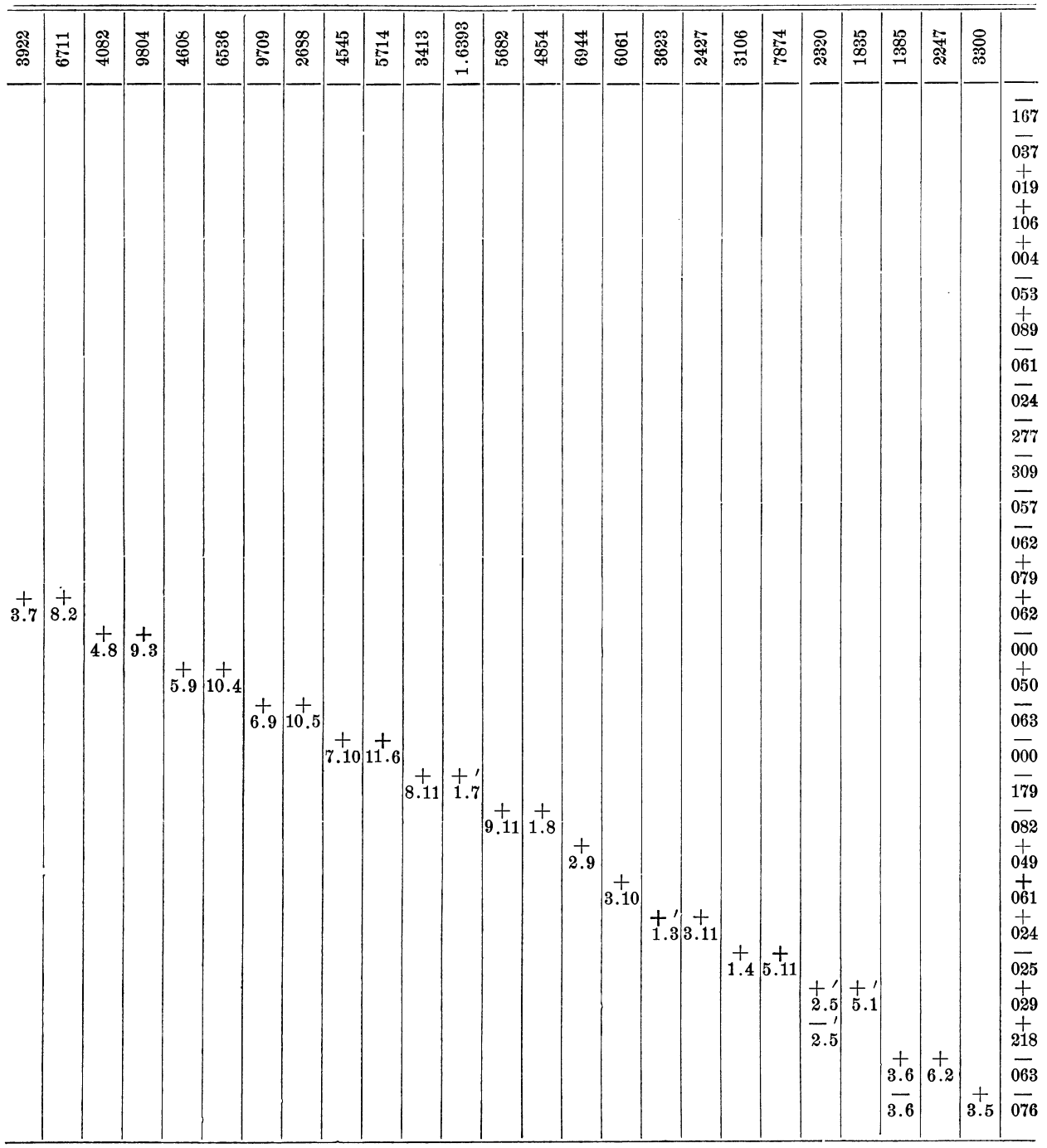
			p	$1-p$
I-	II″	+ .110	4.33	.2309
I-	III′	— .182	2.76	.3623
I-	IV	+ .013	3.22	.3106
I-	V′	+ .024	5.45	.1835
I-	VI	+ .067	3.83	.2611
I-	VII′	— .130	0.61	1.6393
I-	VIII	+ .083	2.06	.4854
II-	III″	— .236	4.77	.2096
II-	V	+ .161	1.55	.6452
II-	V′	— .057	4.31	.2320
II-	VI	— .144	4.45	.2247
II-	VIII	— .137	1.49	.6711
II-	IX	+ .008	1.44	.6944
III-	V	— .053	3.03	.3300
III-	VI	+ .029	7.22	.1385

			p	$1-p$
III-	VII	— .099	2.55	.3922
III-	IX	+ .514	1.02	.9804
III-	X	+ .203	1.65	.6061
III-	XI	+ .130	4.12	.2427
IV-	VIII	+ .164	2.45	.4082
IV-	X	— .000	1.53	.6536
V-	VI″	+ .006	2.19	.4566
V-	IX	+ .119	2.17	.4608
V-	X	— .018	3.72	.2688
V-	XI	— .196	1.27	.7874
VI-	IX	+ .072	1.03	.9709
VI-	XI	+ .092	1.75	.5714
VII-	X	+ .009	2.20	.4545
VIII-	XI	— .104	2.93	.3413
IX-	XI	— .254	1.76	.5682

Representing by 1.2, 2.3 . . . . 1.2′, 2.3′ . . . . the required corrections to I–II, II–III, ... the conditions to be satisfied are expressed by the 29 equations following:

I-p	3484	4132	4673	3279	3597	3333	6329	4016	3922	2525	1126	2959	2309	6536	2096	7358	3759	4566	6623	5780	9174	4525	6944	6452	2611
1	+ 1.2	+ 2.3	+ 3.4	+ 4.5	+ 5.6	+ 6.7	+ 7.8	+ 8.9	+ 9.10	+ 10.11	+ 11.1	— ′ 1.2													
2	+ 1.2												— ″ 1.2	— ′ 2.3	— ″ 2.3	— ′ 4.5	— ′ 5.6	— ″ 5.6	— ′ 6.7	— ′ 7.8	— ′ 8.9	— ′ 9.10	— ′ 10.11	+ 2.5	+ 6.1
3	+ 1.2																								
4		+ 2.3																							
5		+ 2.3																							
6				+ 4.5																					
7					+ 5.6																				
8					+ 5.6																				
9						+ 6.7																			
10							+ 7.8																		
11								+ 8.9																	
12									+ 9.10																
13										+ 10.11															
14	+ 1.2																+ ′ 5.6								
15		+ 2.3																		+ ′ 7.8					
16			+ 3.4																		+ ′ 8.9				
17				+ 4.5																		+ ′ 9.10			
18					+ 5.6																	+ ′ 9.10			
19						+ 6.7					+ 11.1												+ ′ 10.11		
20							+ 7.8				+ 11.1														
21								+ 8.9			+ 11.1														
22									+ 9.10	+ 10.11	+ 11.1	+ ′ 1.2													
23										+ 10.11	+ 11.1	+ ′ 1.2		+ ′ 2.3											
24											+ 11.1														
25											+ 11.1		+ ″ 1.2			+ ′ 4.5									
26																								+ 2.5	
27															+ ″ 2.3										
28																		+ ″ 5.6							
29																									

Employing the usual method of solution by correlates we derive the following system



of normal equations, the reciprocals of the weights being given above.

	k_1	k_2	k_3	k_4	k_5	k_6	k_7	k_8	k_9	k_{10}	k_{11}	k_{12}	k_{13}	k_{14}	k_{15}
1	4.0416	.3484	.3484	.4132	.4132	.3279	.3597	.3597	.3333	.6329	.4016	.3922	.2525	.3484	.4132
2	.3484	.6443	.3484											.3484	
3	.3484	.3484	.5793											.3484	
4	.4132			1.0668	.4132										.4132
5	.4132			.4132	.6228										.4132
6	.3279					1.0632									
7	.3597						.7356	.3597						—.3759	
8	.3597						.3597	.8163							
9	.3333								.9956						
10	.6329									1.2109					—.5780
11	.4016										1.3190				
12	.3922											.8447			
13	.2525												.9469		
14	.3484	.3484	.3484				—.3759							1.6306	
15	.4132			.4132	.4132					—.5780					2.0545
16	.4673										—.9174				
17	.3279					.3279						—.4525			
18	.3597						.3597	.3597				—.4525			
19	.3333								.3333				—.6944		
20	.7455									.6329					
21	.5142										.4016				
22	.7573	—.2959										.3922	.2525		
23	.3651	—.2959		—.6536									.2525		
24	.1126														
25	.1126					—.7353									
26			—.2309												
27														.6452	
28					—.2096										
29								—.4566							

The solution of these equations gives for k_1, k_2 — —, and finally 1.2, 2.3, . . . the

$k_1 = +.1785$ $k_{11} = -.4001$ $k_{21} = -.0049$

$k_2 = -.1797$ $k_{12} = -.1621$ $k_{22} = -.0485$

$k_3 = +.1912$ $k_{13} = -.1898$ $k_{23} = +.1050$

$k_4 = +.2553$ $k_{14} = -.0955$ $k_{24} = +.0163$

$k_5 = -.3257$ $k_{15} = -.0894$ $k_{25} = -.0880$

$k_6 = -.1661$ $k_{16} = -.1624$ $k_{26} = +.1782$

$k_7 = +.2128$ $k_{17} = +.0010$ $k_{27} = +.3659$

$k_8 = -.4010$ $k_{18} = -.0650$ $k_{28} = -.3081$

$k_9 = -.0557$ $k_{19} = -.0841$ $k_{29} = -.3262$

$k_{10} = -.3475$ $k_{20} = -.0330$

v, 1. $2 = .3484\ (k_1 + k_2$

2. $3 = .4132\ (k_1 + k_4$

3. $4 = 4673\ (k_1 + k_{16})$

4. $5 = .3279\ (k_1 + k_6$

5. $6 = .3597\ (k_1 + k_7$

6. $7 = .3333\ (k_1 + k_9$

7. $8 = .6329\ (k_1 + k_{10}$

8. $9 = .4016\ (k_1 + k_{11}$

9.10 $= .3922\ (k_1 + k_{12}$

10.11 $= .2525\ (k_1 + k_{13}$

11. $1 = .1126\ (k_1 + k_{20} + k_{21}$

k_{16}	k_{17}	k_{18}	k_{19}	k_{20}	k_{21}	k_{22}	k_{23}	k_{24}	k_{25}	k_{26}	k_{27}	k_{28}	k_{29}	
.4673	.3279	.3597	.3333	.7465	.5142	.7573	.3651	.1126	.1126					—.167
						—.2959	—.2959							—.037
										—.2309				+.019
							—.6536							+.106
												—.2096		+.004
	.3279								—.7353					—.053
		.3597												+.089
		.3597											—.4566	—.061
			.3333											—.024
				.6329										—.277
—.9174					.4016									—.309
	—.4525	—.4525				.3922								—.057
			—.6944			.2525	.2525							—.062
											.6452			+.079
														+.062
2.7733														—.000
	1.8948	.4525												+.050
	.4525	2.0519												—.063
			2.0536											—.000
				2.7261	.1126	.1126	.1126	.1126	.1126					—.179
				.1126	1.5678	.1126	.1126	.1126	.1126					—.082
				.1126	.1126	1.7476	.6610	.1126	.1126					+.049
				.1126	.1126	.6610	1.9207	.1126	.1126					+.061
				.1126	.1126	.1126	.1126	.7176	.1126					+.024
				.1126	.1126	.1126	.1126	.1126	1.9459					—.025
										.6464	—.2320			+.029
										—.2320	.8772			+.218
												.5728	—.1385	—.063
												—.1385	.9267	—.076

values following:

$+ k_8 + k_{14}) = +.033$

$+ k_5 + k_{15}) = +.008$

$= +.008$

$+ k_{17}) = +.004$

$+ k_8 + k_{18}) = -.027$

$+ k_{19}) = +.013$

$+ k_{20}) = -.128$

$+ k_{21}) = -.091$

$+ k_{22}) = -.013$

$+ k_{22} + k_{23}) = +.011$

$+ k_{22} + k_{23} + k_{24} + k_{26}) = +.014$

v, 1. $2' = .2959\ (-k_2 + k_{22} + k_{23}) = +.070$

1. $2'' = .2309\ (-k_3 + k_{26}) = -.003$

2. $3' = .6536\ (-k_4 + k_{23}) = -.098$

2. $3'' = .2096\ (-k_5 + k_{28}) = +.004$

4. $5' = .7353\ (-k_6 + k_{25}) = +.057$

5. $6' = .3759\ (-k_7 + k_{14}) = -.116$

5. $6'' = .4566\ (-k_8 + k_{29}) = +.034$

6. $7' = .6623\ (-k_9) = +.037$

7. $8' = .5780\ (-k_{10} + k_{15}) = +.149$

8. $9' = .9174\ (-k_{11} + k_{16}) = +.218$

9.10 $' = .4525\ (-k_{12} + k_{17} + k_{18}) = +.044$

10.11 $' = .6944\ (-k_{13} + k_{19}) = +.073$

Applying these corrections to the differences of consecutive groups given on page 389 we obtain the corrected differences, viz.:

I- II	+ .096
II- III	— .240
III- IV	+ .020
IV- V	+ .025
V- VI	— .028
VI- VII	+ .054
VII-VIII	+ .107
VIII- IX	+ .104
IX- X	— .142
X- XI	— .057
XI- I	+ .062
Σ	+ .001

Therefore we have

I = II	+ .096
III	— .144
IV	— .124
V	— .099
VI	— .127
VII	— .073
VIII	+ .034
IX	+ .138
X	— .004
XI	— .061

Adding .033 to each group in order to make the algebraic sum of these corrections zero, we find the following series of values which are applied to the results from the different groups to reduce all to a homogeneous system:

I	+ .033
II	+ .129
III	— .111
IV	— .091
V	— .066
VI	— .094
VII	— .040
VIII	+ .067
IX	+ .171
X	+ .029
XI	— .028

Final Values of the Latitude.

In the final results which follow, all known corrections and reductions have been applied. The tabular statements seem to require no further explanation. The folding sheet gives the individual results as derived from each observation. The probable error of a single determination, derived from these values and therefore including the outstanding error of the adjusted declinations, is as follows:

Group	I	0.″209	393	Observations.
	II	.200	343	"
	III	.206	382	"
	IV	.227	172	"
	V	.263	299	"
	VI	.239	359	"
	VII	.194	151	"
	VIII	.194	181	"
	IX	.238	139	"
	X	.207	248	"
	XI	.196	223	"
Mean,		0.″216	2890	"

Daily Mean of Latitude.

		P.M.	No.	A.M.	No.
		"		"	
1892 October	10	3.45	5	3.10	11
	11	3.38	12	3.03	9
	14	3.28	12	3.18	13
	16			3.17	18
	19	3.37	12	2.93	19
	21	3.53	12	3.20	19
	23	3.46	10	2.96	6
	24	3 29	5		
	30	3.13	14	2.94	16
November	5	3.23	8		
	8	3.22	12		
	11	3.55	12		
	13	3.27	15	3.27	12
	16			3.08	13
	17	3.02	12		
	20			3.60	4
	22			2.97	11
	26			3.13	13
December	1	2.99	13		
	2	3.19	14		
	3	2.91	15		
	5	2.93	16	3.36	13
	9			3.50	8
	10	3.04	15		
	11			3.15	13
	12	3.13	14		
	15			3.19	3
	17			2.96	16
	18			2.94	11
	20	2.81	12		
	22			2.88	2
	23	3.04	8		
	25			3.17	8
	26	2.85	17		
	27	3.14	14	3.07	12
	28	2.93	18	2.92	9
1893 January	3			2.95	10
	7			3.03	5
	13	3.21	13		
	16	3.09	12		
	17	3.16	13		
	19			3.01	11
	20			2.77	8
	21	2.78	20		
	23	3.14	9		
	25	2.93	20		
	26	3.09	19		
February	3			2.92	10
	4	2.71	18	3.21	10
	8	3.17	15		
	11			3.12	12
	14	2.98	14		
	15	2.85	8	3.13	11
	16			2.92	10
	20	2.76	22		
	24	2.78	5		
	25			2.90	12
	26	2.94	21	3.08	11
March	1	2.82	15	2.87	10
			521		379

		P.M.	No.	A.M.	No.
		"		"	
1893 March	6	2.92	17		
	7	2.90	17	2.87	4
	13	3.10	14	3.39	6
	16	3.02	7		
	17			3.11	10
	18	2.83	21	3.15	9
	21	3.10	5		
	27	2.98	20	2.88	7
	28	2.80	20	2.88	5
	29	3.11	21	3.04	7
April	2	2.92	17		
	4	3.07	6	2.62	9
	16	3.12	11		
	17			3.10	11
	18			3.09	10
	23			3.07	6
	24	2.86	19		
	25	3.03	2	2.66	9
	28	2.88	17		
May	6	2.96	15	2.84	10
	7	3.07	15	3.06	10
	8	2.88	15		
	9	2.95	16		
	10	3.14	18		
	11			3.16	11
	12	3.01	15		
	19	3.14	16	2.98	11
	31	3.24	12		
June	7	3.16	11	3.32	12
	8	3.06	17	3.11	11
	9	3.05	17	3.17	13
	11	3.01	13	3.10	2
	13	3.08	17		
	14			3.03	10
	17			3.19	14
	20	3.16	14		
	23	3.17	15	3.02	8
	24	3.13	14		
	28			3.25	14
	30			2.99	14
July	2	3.15	18	3.62	1
	5			3.24	12
	7	3.05	9		
	9	3.26	18	3.12	14
	10	3.20	18	3.18	12
	11	2.98	12		
	16	3.24	9		
	17	3.26	10	3.15	13
	18	3.09	9	3.06	11
	19	3.05	10	3.19	14
	20	3.23	15	3.44	1
	23			3.17	16
	27	3.08	18		
	29	3.11	18		
	30	3.22	17		
August	2			3.23	8
	5	3.06	16	3.26	9
	6			3.21	10
	7	3.07	2	3.18	10
			653		364

		P.M.	No.	A.M.	No.
		"		"	
1893 August	8	3.23	18	3.11	10
	9	3.09	18	3.18	10
	10			3.05	10
September	2	3.32	18	3.04	9
	3	3.33	16	3.27	5
	6	3.27	18		
	8	3.21	17	3.09	10
	9	3.23	17		
	12	3.22	14		
	16	3 33	12		
	17			3.12	7
	19			2.97	7
	20			3.22	17
	21			3.06	12
	23			3.08	17
	27	3.31	16		
	28	3.34	14		
	29	3.15	18	3.29	10
	30	3.46	18	3.33	10
October	1	3.21	18	3.31	10
	2			3.33	10
	3	3.34	11		
	7			2.96	10
	8			3.08	10
	9			3.00	10
	14	3.30	17		
	17	3.47	18		
	18	3.23	17		
	20	3.44	6		
	21	3.35	5		
	24	3.28	18		
	25			2.91	12
	28			3.49	10
	29			3.10	12
	30			3.50	12
	31	3.35	18	3.19	11
November	3	3.23	9		
	6	3.38	19	3.33	11
	10	3 36	19	3.37	12
	11	3.36	19	3.36	12
	15	3.27	18	3.02	12
	16	3.37	19		
	26	3.20	19		
	29	2.87	1		
	30	3.24	17		
December	4	3.24	18	3.25	5
	5			3.05	10
	6	3.27	16		
	7	3.27	10	3.42	9
	10	3.14	10	3.15	10
	12	2.80	10		
	13	3.16	10	3.56	9
	17	3.34	1		
	20	3.26	10	3.22	10
	23	2.70	9		
	24	3.12	10	3.04	10
	25	2.79	10	3.15	7
	26	3.23	10	3.05	10
	27			3.00	9
			606		377

Weighted Mean Date			ø P.M.	No.	ø A.M.	No.	Mean	A.M.–P.M.
			″		″		″	″
1892	October	17	3.397	18	3.095	95	3.246	— .302
	November	12	3.234	73	3.106	69	3.170	— .128
	December	10	3.004	107	3.147	66	3.076	+ .143
1893	January	5	3.048	87	2.991	63	3.020	— .057
	February	3	2.944	123	3.065	53	3.004	+ .121
	March	3	2.900	118	3.025	53	2.962	+ .125
	March	31	2.958	121	2.977	58	2.968	+ .019
	May	1	2.938	68	2.895	35	2.916	— .043
	May	18	3.066	103	3.155	34	3.110	+ .089
	June	17	3.093	107	3.115	86	3.104	+ .022
	July	13	3.162	128	3.170	94	3.166	+ .008
	August	4	3.131	107	3.172	67	3.152	+ .041
	September	11	3.271	112	3.107	84	3.189	— .164
	October	7	3.315	176	3.185	70	3.250	— .130
	November	6	3.343	121	3.247	104	3.295	— .096
	December	2	3.232	71	3.117	15	3.174	— .115
	December	18	3.059	90	3.194	74	3.126	+ .135
				1780		1120		

	20	3.44									
	23										
	27	2.81	3.30	3.21	3.20	3.13	2.60	3.16	3.50	3.48	3.46
	29	3.45	2.79	3.25	3.11	3.48	3.49	2.67	3.12	3.03	2.93
	30	3.10		3.31	2.93	2.93	3.30	2.95	3.36	2.84	3.95
Aug.	2										
	5	2.70	3.47	2.80		2.62	3.01	3.60	2.84	2.76	
	6										
	7										
	8	3.23	3.19	3.32	3.29	3.08	3.44	3.22	3.72	2.67	3 26
	9	3.03	3.24	3.32	3.34	3 20	3.20	2.55	3.17	2.99	2.85
	10										
Sept.	2	3.30	3.20	3.15	3.03	3.23	3.40	3.40	3 39	3.29	3.46
	3	3.46	3.43	2.86	3.56	3.53	3.38	3.20	3.44	3.25	3.57
	6	3 37	3.30	2 84	2 88	3.26	3.17	2.96	3.33	3.49	3.65
	8	3.22	3.31	3.25	3.62	3.08	3.46	3.50	3.85	3.05	2.57
	9	3.04	3.43	3.61	2.67	2.62	2.99	3.17	3.19	3.03	
	12	2.95	2.97	3.03	3.53	3.55	3.35	3.54	2.99		
	16	3.17	3.09	3.36	3.42	3.27					
	17										
	19										
	20										
	21										
	23										
	27		3.68	3.03	3.70	3.13	3.46	2.94	3.61	3.41	2.61
	28	3.89		3.39	3.07	3.42	3.31	3.25	3 58		3.31
	29		3.80	2 99	3.39	3.18	3.05	3.05	2.82	3.15	2.42
	30		3.31	3.61	3.16	2.76	3.47	3.65	3.67	3 51	3.85
Oct.	1		3.26	2.71	3.57	3.13	3.79	3.33	2.99	3.12	3.29
	2										
	3		3.83	3.70	3.03	2.87	3.43	3.20	3.39	3 21	3.52
	7										
	8										
	9										
	14		3.37	3.09	3.16	3.42	3.47	2 93	3.55	3.06	2.93
	17		3.73	3.47	3.04	3 33	3.59	3.82	3.79	3.60	3.41
	18		3.62		3.50	3.38	3.21	2.93	3.05	3.13	2.74
	20		3.80	3.55	3.41	2.93	3.33	3.65			
	21		3.65	3 23	3.25	3.39	3.24				
	24		3.71	3.48	3.28	3.24	3 36	3.09	3.20	3.08	3.39
	25										
	28										
	29										
	30										
	31										
Nov.	3										
	6										
	10										
	11										
	15										
	16										
	26										
	29										
	30										
Dec.	4										
	5										
	6										
	7										
	10										
	12										
	13										
	17										
	20										
	23										
	24										
	25										
	26										
	27										

	23	3 41	3.99	3.00	3.28	2.78	2.75	2.71	3.57	3.32
	27		3.05		3.60	3.22	3 37	3.66	3.53	2.98
	28	3.25	3.60		3 14	2 81	3.61	3.11		
	29	2.86	3.05	3 28	3.05	3 69	3.13	3.38	3.26	3 18
	30	3 37	3.38	2.96	3.43	3.80	3.57	3.42	3 64	3 77
Oct.	1	3 42	3 00	3 19	2.96	3.55	3.04	3.41	3 25	2.82
	3	3.22	3.34							
	14	3.34	3.52	3.67		3 83	3.04	3 28	3.31	3 05
	17	3.31	3 75	3.48	3.82	3.20	3 36	3.26	3.29	3 25
	18	3.58	2.69	3 54	3.35	3.41	3.23	3 24	3.41	2.97
	24	2.89	3 51	2.72	3.54	3.31	3.52	3.41	2.93	3.43
	31	3.71	3.10	3 83	3.33	3.49	3.28	3 61	3.20	2.73
Nov.	3		3.68	2.82	3 60	3 17	3.23	2.67	3 16	3.13
	6	3.84	2.97	3.47	2.96	3.14	3.36	3.59	3.38	3 44
	10	3.46	3.13	2.82	3.47	3.36	3.71	3 50	3.34	3 51
	11	3.39	3.36	3.53	3.16	3.48	3 27	3.20	3.24	3.20
	15	3.58	3 35	3.00	3.54	3 12	3.68	2.89	3 50	3 95
	16	3.64	2.83	3.80	3.30	3.41	3.33	3.29	3.01	3.52
	26	2.73	2 88	3.17	3.20	2.73	3 16	3 31	2.97	3.62
	29		2 87							
	30			3.63	2 95	3.41	3.19	3.22	3 30	3.20
Dec.	4		3.73	3.10	2 87	3.09	3 82	3.46	2 86	3 74
	6		3.15	3.53	3 00		3.52	3.93	3 39	

	23	3.36	2.97	2.52	3.36	3.38	3 32	3.01			
Aug.	2	3.27	3.54		2.72	2.88	3.55	3.13	2.99		3.76
	5	3.26	3.19	3.19	2.89		3.17	3.23	3.37	3 53	3.54
	6	3.23	3 57	2.65	3.17	3.13	3.21	3.06	3.32	3.27	3.51
	7	3.17	2.82	3.50	2.76	3.78	3.01	3.07	3 32	3.03	3 32
	8	2.98	3.85	2.87	3.55	3.10	2.86	2.92	2.71	2.92	3.30
	9	3.09	2.83	3.27	3.13	3.62	3.45	3.09	3.44	2.92	3.01
	10	3.22	3.00	2.36	3.73	2.87	3.07	2.74	3.35	3.06	3.11
	31	3.43	3.48		3.45	2 94	3.34	2.89	3.66	3.46	3.38
Nov.	3	3.56									
	6	3.66	3.41	3.34	3.62	3 50	4.08	3.88	3.13	2.97	2.54
	10	3 08	3.81	2.85	3.65	3.21	3 12	3.24	3.29	3.54	3 73
	11	3.36	3.27	3.64	3.69	3.67	2 67	3.58	3.90	2.97	3 30
	15	3 00	3.71	2.92	3 35	2 72	3 21	3.24	3.40	2.74	
	16	3.29	3.34	3.98	3.36	3.31	3.04	3.61	3.18	3.46	3.27
	26	3.50	2.85	3.42	3.15	3.26	3.52	3.15	3.36	3 89	2.95
	30	3.24	3.63	3 17	3.54	3 05	3 32	3.01	3.15	2.78	3.26
Dec.	4	3.06	3.12	3.70	3.00	3.26	3.02	3.63	2.90	2.97	3.07
	6	3.10	3.67	3.22	3 55	2.83	3 56	2.79	2 90	3.06	3.14
	7	3 40	3.17	3 37	2.88	3.41	3.62	3.25	3.70	3.13	2.80
	10	3.16	3 46	3.18	2 70	2 93	3 21	2 90	2 99	3.35	3.49
	12	3.00	2.64	3 09	1.85	3.03	3 40	2 88	2 75	2.65	2.71
	13	3.06	3.52	2.87	3.15	3.20	2 79	3.13	3.14	3.32	3 40
	17	3 34									
	20	3.16	3 58	3.43	3 43	2.71	3 08	3.53	3 66	3.32	2 70
	23	3.06	3.02	3.05	1 82	2.48	2.31	2.89		2.86	2.80
	24	3.06	3.10	3 22	3 25	3 04	3 38	3.39	3.05	2.55	3.21
	25	3.08	2.57	2 20	2.64	2.98	2 77	2.50	2.66	3.12	3.34
	26	3.32	3.02	3.37	3.67	2.96	3.52	3.26	3.07	3.40	2 67

Sept.	2		3.31	2.78	2 65	2.98	2.76	3.12	2.84	3.81	3.09	
	3	3.32	2.90		3.50	3.35	3.27					
	8	2.78	3.05	3.59	2.77	2.89	2.80	3.68	3.27	3.39	2.71	
	17		3.61	2.76	3.17	3.12	2.92	2 84	3.45			
	19	2.96	2 83	3.40	3 22	2.90		3.25	2.22			
	20	3.06	3 46	3.56	2.87	2 76	4.12	3.07	3 49	3.53	3.44	2.3
	21	3 24	2.76	2.71	3.45	3 14	3.03		3.25	2 87	3.04	2.9
	23	2.87	3.42	2.87	2.76	3 66	3.16	3.10	3 34	2.93	2 82	2.4
	29											2 8
	30											3 3
Oct.	1											3 3
	2											2.6
	7											3.3
	8											2.9
	9											2.9

	15																													
	16																													
	20																													
	24																													
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	26																													
Mar.	1																													
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	27																													
	28																													
	29																													
April	2																													
	4																													
	16																													
	17																													
	18																													
	23																													
	24																													
	25	2.29	2.98																											
	28																													
May	6	2.87	2.88	3.22																										
	7	2.72	3.12	2.28																										
	8																													
	9																													
	10																													
	11	2.92	2.94	3.39	3.21																									
	12																													
	19	2.08	2.49		3.24	3.48	3.66																							
	31																													
June	7		3.18	3.43	3.12	3.38	2.98	3.32	3.45	3.17	3.92																			
	8	2.63		3.24	3.82	3.16	2.95	2.87	2.91	2.95	3.25																			
	9	3.61	2.75	3.09	3.14	2.89	3.36	2.91	2.88	3.04	3.39																			
	11																													
	13																													
	14	2.95	2.84	3.16	2.80	3.35	3.21	3.06	2.67	3.17	3.10																			
	17	3.11	3.28	3.41	3.31	2.72	2.89	3.58	3.07	3.31	2.63	2.87	3.54	2.96	2.96															
	20																													
	23				3.25	3.20	3.61		2.59	2.79	2.75	3.00	3.00																	
	24																													
	28					3.24	3.31	3.78	3.37	3.31	3.75	3.13	3.33	2.94	3.07	3.35	2.90	2.72	3.24											
	30					3.15	3.07	2.84	2.81	2.64	3.16	2.91	2.93	2.79	3.10	3.40	2.58	3.41	3.01											
July	2	3.62																												
	5						3.29	2.95	3.66	3.50	3.28	3.41	2.97	2.88	3.03		3.06	3.30	3.57											
	7																													
	9	2.67					3.61	2.96	3.05	3.22	2.93	3.21	3.17	3.24	3.15	2.75	3.11		3.51		3.14									
	10	3.12										3.09	3.27	2.87	3.63	3.08	3.25	3.26	3.02	3.11	3.39	3.11								
	11																													
	16																													
	17	2.82										3.01	2.78	3.58	3.50	3.41	2.87	3.14	3.34	2.77	3.38	3.20	3.15							
	18													2.83	2.83	2.85	3.01	2.60	2.81	3.61	3.50	3.42	3.29		2.94					
	19	3.15										2.94	3.82	2.70	3.11	3.20	3.08	3.19	3.40	2.63	3.28	3.42		3.60	3.17					
	20	3.44																												
	23											3.41	3.99	3.00	3.28	2.78	2.75	2.71	3.57	3.32	3.36	2.97	2.52	3.36	3.38	3.32	3.01			
	27	2.81	3.30	3.21	3.20	3.13	2.60	3.16	3.50	3.48	3.46																			
	29	3.45	2.79	3.25	3.11	3.48	3.49	2.67	3.12	3.03	2.93																			
	30	3.10		3.31	2.93	2.93	3.30	2.95	3.36	2.84	3.95																			
Aug.	2																				3.27	3.54		2.72	2.88	3.55	3.13	2.99		3.76
	5	2.70	3.47	2.80		2.62	3.01	3.60	2.84	2.76											3.26	3.19	3.19	2.89		3.17	3.23	3.37	3.53	3.54
	6																				3.23	3.57	2.65	3.17	3.13	3.21	3.06	3.32	3.27	3.51
	7																				3.17	2.82	3.50	2.76	3.78	3.01	3.07	3.32	3.03	3.32
	8	3.23	3.19	3.32	3.29	3.08	3.44	3.22	3.72	2.67	3.26										2.98	3.85	2.87	3.55	3.10	2.86	2.92	2.71	2.92	3.30
	9	3.03	3.24	3.32	3.34	3.20	3.20	2.55	3.17	2.99	2.85										3.09	2.83	3.27	3.13	3.62	3.45	3.09	3.44	2.92	3.01
	10																				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1892	I										II									III										IV									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Oct. 10	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃
				3.44		3.63		3.25		3.00	3 91																												
11	3.53	3.85	3.03	3.35	3.62	2.94	3.24	3.03	3.50		3.53	3 09	3.83																										
14		2.62	3 07	2.90	3.27	3.15	3.61	3.59	3.54	3.82	2.99	3.32	3.46																										
16																																							
19	3.08	3.30	3.52	3.44	3.51	3.39	4.33	2.36	3.86	2 75	3.95	2 97																											
21	3.36	3.22	4.01	3.26	3.37	3.69		3.59	3.80	3 44	3.46	3 45	3.68																										
23	3.30	3.59	3.33	3.78	3.76			3.37	3.28		3.55	2 94	3.74																										
24		3.12	3 43	3.53	3.10	3.27																																	
30					2.87	3 20	3.14	2.85	3.23	2.44	2 73	3 48	4.02	2 83		2 90	3 62	3.17	3.29																					
Nov. 5					2.80	3.17	3.23	3 67	3 60			3 30	3.30		2.76																									
8								3.48	3 41	2.90	2.77	3.30	3 43	2.62	3.47	3 26	2 97	3 60	3.37																					
11						4.02	3 52		3.19	4.60	3.13	3.44	3 17	3.34		3.48	3 41	3.38	3.95																					
13					3.65	3.30	3.10	3.12	3.23	3.21	3.57	3 20	3 37	3 30	3 70	3.13	3 20	3 20	2.76																					
16																																							
17								3.70	3.02	3.42	2.69	3.19	2 91	3 34	2.76	3.11	2.71	2.48	2.91																					
20																																							
22																																							
26																																							
Dec. 1													3.15	3.14	2 91	2.52	3.08	3.00	2.70	2.71	3.05	2.89		3.00	3.47	3.30														
2													3 49	2.97	3 06	3.44	3.00	3.11	3.37	3.50	3.47		3.15	3.18	3.08	2.84	2.99													
3													3.17			2.61	3 06	3.12	2 64	2.40	2.85	2.91	2.88	2.99	3 17	2.71	3.05	3.41	2 69									
5													2.06		2.58	2 99	2 91	3.15	3 27	2.89	2.48	2 95	2.97	3.23	2.80	3.63	2.53	2.71	3.66									
9																																							
10														3 24	3.05	2 77	2.93	2.97		3.16	3.10	2.98	2.81	2.95	3.06	2.86	3.09	3.38	3.25									
11																																							
12															2.66	2 98	2 72	3.12	3.37	3.64	2.94	3.38	3.13		3 57	3.40	3 04	3.05	2 80									
15																																							
17																																							
18																																							
20																		3.84	3.20	2.67	2.31	2.71	3.01	2.46	1.68	2.83	2.75	3.21	3.01									
22																																							
23																				3.07	2.72	3.20	3.10	2.96	3.21	2.97	3.05											
25																																							
26																					3.73	2.95	3.09	2.76	3.03	2.46	3.39	2.95	3.11	2.65	2 79	2.57	3.23	3.01			2.14	2.70	1.96
27																				3.18	3.08	3.42	2.63	3.67	3 07	3.02	3.19		2.68	2.85	3 34	3.25	3 36	3.20					
28																				2.89	3.02	2.97		2.95	2.62	2.82	2.93	3.18	2.81	2 87	2.41	3.28	3.32	3.18	3.15	2.44	2.83	3.08	
1893																																							
Jan. 3																																							
7																																							
13																									3.02	2.80	3.70		2.85	3.28	2.82	2 57	3.82	3.49	2.80		3.73	3.11	3.76
16																										3.19		3.16	3 35	3.21	2 87	3.11	3.44	2 57		3 36	2.96	2.99	2.83
17																										3.05	3.29	3.38	2.60	2.89	3.42	3.03	2 89	3.09	3.95		3.04	3.39	3.15
19																																							
20																																							
21																														3.07	2.44	3.19	2 88	2.70	2.34	2.93	2.52	2.06	2.95
23																														3.16	3 25	2.69	3.42	3.39		3 03	2 87	2.92	3 56
25																														2.80	2 63	2 82	2.45	2.65	2 91	2.96	2 82	2.79	2.80
26																														3.13	3.46	3 14	2.95	3.06	2 77	3.00	3.39		3.12
Feb. 3																																							
4																																3.26	3.13	2.52	2.55	2.41	2 41	2 52	3 16
8																																		3.99	3.25	3.18	3 09	3.55	3.59
11																																							
14																																				3.55	2.99	2.74	2.30
15																																							
16																																							
20																																							
24																																							
25																																							
26																																							
Mar. 1																																							
6																																							
7																																							
13																																							
16																																							

65	2.98	2.76	3.12	2.84	3.81	3.09
50	3.35	3.27				
77	2.89	2.80	3.68	3.27	3.39	2.71
17	3.12	2.92	2 84	3.45		
22	2.90		3.25	2.22		
87	2 76	4.12	3.07	3 49	3.53	3.44
45	3 14	3 03		3.25	2 87	3.04
76	3 66	3.16	3.10	3 34	2.93	2 82

2.37	3.25	2.79	3.29	2.75	3.55	3.31			
2.97	2.97	3.23							
2.47	2.96		3.42	3.48	2.88	3.22	3.07		
2 86	3.23	3.28	2.70	3.78	3.71	3.06	3.20	3.15	3.89
3 34	3.38	3.04	4.24	3.47	2.27	3.51	2.97	4.08	2.96
3 33	3.46	3.14	3.30	2.39	3.90	3.03	3.27	3.40	3.91
2.63	3.52	2.96	3.62	3.62	3.08	2 93	3.27	4 59	3.06
3.33	2.65	3.80	2 53	2.99	3.25	3.12	2.70	2.38	2.80
2.91	3.03	3.24	2.83	3 70	2.48	3.44	3.49	3.10	2.61
2.97	2.96	3.02	2.69	2.78	3.73	3 51	2.85	2.55	2 96

3.09	2.81	3.62	2 74	2.74	3.11	2.90	2.69	3.07	2.78	2.70	2.76
3.55	3.53	3.19	3 95	2.88	3.93	3.06	3.27	3.44	4.12		
3 01	2.75	3.49	2 61	3.45	3 21	3.29	2.68	3.04	3.14	3.60	2.98
3.67	3 12	3.08	3 90	3.25	3.68	2.66	4.11	3.42	3.47	3.54	4.11
3.29	2 89		3.57	3.37	2.72	3.09	3.03	3.07	2 97	3.82	3.23
2.97	2 84	3.46	3.47	3.56	3 17	3.23	3 58	3 31	3.65		3 44
3.34	3.34	3 59	3.53	3.39	3.21	3.22	3.23	3.33	3.34	3 51	3 40
3.23	3.72	3.10	3 68	3.12	3.51	3.39	3 86	3.47	3.15	2 64	3.41
3.55	2 97	3.30	2.33	2.86	3.56	2.97	2 54	2.99	3.10	3.16	2 86

2.86	3.50	2.71	3.51		3.67						
2.94	2.61	2 74	3.10	3.04	3.37	2 87	3.12	3 41	3.30		
3.66	3 43	3.13	3.55	3.22	3.15	3 67	4.05	2.89			
3.38	2.99	3.21	2.96	3.06	3 31	3 57	2.70	2.98	3.31		
4.22	3.46	3.21	3.54	2.02	3.74		4.89	3.51	3.44		
3.51	3.26	3.79	3.09	3.26	2.65	3 11	3 22	3.20	3.11		
3.81	2.85	2 90	2.97	2.65	2.76	2.63	3.34	3.13	3.36		
3 45	2 85	3.72	3.29	2.66	3.10	2.95					
2.71	2.23	1.98	3.97	3 04	3.35	2.84	3.73	3.25	3.41		
3.26	3.02	3.40	2.93	2.96	2.88	3.12		2.48	2.94		

3.24	2.63	2.65	2.85	2.69	2.00	2.42	2.56	2.73	2.42
2.57	2.56	2.73	2.96	3.06					
2.51		2.76	3.05	3.11	3.63	2.46	3.01	2.72	3.14
	2.74	2.17	3.12	2.96	2.24	3.17	3.14	3.23	2.78
					2.75	2.66	3.48	2.80	3.16
					2.74	3.04	3.09	3.10	2.90
							3.43		3.81

2.36	2.85	2.65	3.25	2 56	2 48	3.32	3.05	2 67	3.33
3.08	2.81	2.86	2.73	3.13	2.78	3.24	3 20	3.29	3.18
2.95	2 97	2.71	2.78	2 59	2 68				
2.47	2.96	2.58	3.36	2.81	2 81	2.96	3.16	2.71	3.20
2.64	2.73	2 60	2.40	3.02	2.78	2 65	3 14	2 89	3.35
2.81	3 48	2.96	3.38	3.43	3.19	2.71	2 98	3.26	2.34
3.13	2.90	2.77	3.42		3.12			3 14	2.64

3.80	2 30								
2.28	2 77								
2.69	3.09								
3.37	2.92								
2.27	3 38								

2 77	2.94	2.84	2.92	2.81	2.53	3.08	3.28	2 99	3.06
3.21	3.22	2.79	3.02	3.25					
	3.40		3.17	3.07	2.93	3.19	2 76	2.57	3.16
	2.99	2 64	2.87	2 94	2.82	2.85	2.90	2 62	
	3.49	3.09	3.05	3 29	3.78	2 89	2.66	3.18	3.32
					2.86	3 21	3 31	2 41	3.08
									3.33

2.61	2.99	2.58	2.97	2.97	2.61		2.63	2.68	2 82
	2.46	2.92	2 99	3.07	3.05	3.14	3.03	3.10	2 70
	3.08	2.77	2.71	2.61	2 66	3.27	2.68	3.32	2.95
	2.39	2.90	3 15	3.39	3.13	2.84	3.25	3 00	3 13
	3.35	2.65	2.93	2 56	2.68	3.23	3 04	3.00	2.71
					3.44	2.84	2.80		
			3.14	3.38	3.23	3.18	3.29	2.64	3.41

2.75	2.26	2.96							
3.01	2.27	2.47							
3.05	2.69								
3.11	3.18								
3.06	3.35	2 85							

2.95	3.02	2.64	3.15	3.19	2.46	2.56	2.85	2.91	2.92
			2.82	3 24					
	2.85	2.86	2.80	2.82	2.75	2 76	2 80	2.51	2.69
				2.95	2.91	2.44	2.45	3.20	3.08
				3.07	2.71	2.82	3.50	2.76	2.91

2.81	3.								
3.70	3.								
2.82	2.								

2.77	2.83	2.81	3.						
	2.75	3.17	2.						
3.25	3.31	3.04	3.						
3.00	2.77	2.50	2.						
	2.98	3.01							

IV							V										VI												VII													
4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	1	2	3	
″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	
										3.66	3.83	2.86	2.92	2.99	2.76	2.76	2.73		3.42	3.22		2.97																				
											2.47	3.33	2.60	3.10	2.84	3.40	3.11		2.82	3.60																						
							2.90		2.83	3.64		2.71	2.97	3.77	3.51		2.86	3.59	3.26	3.06		2.72	3.52																			
							3.06	3.02	3.40	3.28	2.42	3.46	3.37	3.59	3.26	3.26	2.55	3.78	2.94	3.16	2.77	3.19	3.70	2.88																		
							3.25	3.01	2.60	2.79	2.67	2.36	3.38	2.83	2.69	1.90	3.01	3 59	2.95	2.86	3.57	2 55	3.78	2.82	3.11																	
							3.00	3.23	3.33	2.88	3.18	3.59	2.74	2.77	2.97	3 68	2.49	3.97	2.98	3.51	3.10	2.72	3.45	3.64	3.53																	
							3.24	3.09	2.83	3.43	3.02	2 16																														
												2.29	2.38		4.01	3.30	3.35	3.28	3.04	2.46	2.74	3.43		2.35	3.14	2.28	2 99	3.02		2.94												
																			2.64	2 87	2.91	2.86		3.91	3.50	3.36	3.36	4.34	3.50	3.43	2.85											
																				2.73	2.97		2.88	2.88	3.02	3.47	2.65	3.15	3.26	2 81	3.13		3.59		3.49							
																							3.70	3.87	3.02	3.81																
																									3.34	3.18	2.88	3.78		2.53	2.96		2 69	3.80	3.16	1.98		2.40				
																										3.23	3.30		3.25	3.21	3.41		3.44	3.19	3.03	3.34	3.13	3.21	2.66	2.26		
																												3.76	3.53	2.85	3.06	3.20	2.76	3.22	3.36	3 33	3.83	3.69	3.45	3.67		
																													3.20	3.78	3.60		3.37	3.36	3.56	3.37		3.73				
																																3.13	3.03	3.32	3.21	2.17	3.26	3.23	3.10	3.43	2.84	3.
																																2.84	3 39		3.35							
																																3.20	3.04	3.11	3.42	3.00	3.06	2.35	2.53	2.94	2 63	2.
																																				2.59	2.83	2.72	3.71	2.71	3.03	3.
																																					3.10	2.67				
.23	3.01			2.14	2.70	1.96																																	3 05	3.24		3.
.36	3.20																																						3.49	3.12	3.08	3.
.32	3.18	3.15	2.44	2.83	3.08																																				2.53	3
																																									3 14	2.
																																										3.
.82	3.49	2.80		3.73	3.11	3.76																																				
.44	2.57		3.36	2.96	2.99	2.83																																				
.89	3.09	3.95		3.04	3.39	3.15																																				
.88	2.70	2.34	2.93	2.52	2.06	2.95	2.87	2.73	2.78	2.76	3.04	2.17	3.11	3.11	3.18	2.80																										
.42	3.39		3 03	2.87	2.92	3 56																																				
.45	2.65	2 91	2.96	2 82	2.79	2.80	3.29	3.13	3.42	2.76	2.97	2.78	2.77	2.88	3.07	3.86																										
.95	3.06	2 77	3.00	3.39		3.12	3.19	3.13	2.95	2.98	3.34	3.38	2.95	3.12	2.70	3.04																										
.13	2.52	2.55	2.41	2 41	2 52	3 16	3.16	3.03	2.53	2.61	2.67	2.96	2.78	2.99	2.07	2.09																										
	3.99	3.25	3.18	3.09	3.55	3.59	2.75	2.72		3.38	3.34	2.47	2.81	3.71	2.81	2 89																										
			3.55	2.99	2.74	2.30	2.69	2.94	2.76	3.74	2.86	2.86	3.13	3.01	2.91	3.21																										
							2.63	2.58		3.36	2.60	3.18	2.79	3.11	2.54																											
							3.24	2.63	2.65	2.85	2.69	2.00	2.42	2.56	2.73	2.42	2.86	2.85	2.65	3.25	2 56	2 48	3.32	3.05	2 67	3.33	3.80	2 30														
							2.57	2.56	2.73	2.96	3.06																															
							2.51		2.76	3.05	3.11	3.63	2.46	3.01	2.72	3.14	3.08	2.81	2.86	2.73	3.13	2.78	3.24	3 20	3.29	3.18	2.28	2 77														
								2.74	2.17	3.12	2.96	2.24	3.17	3.14	3.23	2.78	2.95	2 97	2.71	2.78	2 59	2.68																				
												2.75	2.66	3.48	2.80	3.16	2.47	2.96	2.58	3.36	2.81	2 81	2.96	3.16	2.71	3.20	2.69	3.09														
												2.74	3.04	3.09	3.10	2.90	2.64	2.73	2 60	2.40	3.02	2.78	2 65	3 14	2 89	3.35	3.37	2.92														
														3.43		3.81	2.81	3 48	2.96	3.38	3.43	3.19	2.71	2 98	3.26	2.34	2.27	3.38														
																	3.13	2.90	2.77	3.42		3.12			3 14	2.64																

									23	
2 89	2.91	3 22	2.85	2.98	2.94	2.86	2.86		27	
2.67	2 97	2.92	3 25	3.32	3.30	3 24	2 92		29	
3.30	3.22	3.53	3.54	3.04	3.24	3 16	2.98		30	
									2	Aug.
3.08	3.09	2.97	3 17	3.21	3 27	3.02	3.43		5	
									6	
2.99	3.15								7	
3.54	3 24	2.83	3 06	3.33	3.03	3.51	3.24		8	
3.04	2 95	2.98	3.24	3.18	2.93	3.06	3.42		9	
									10	
3.24	3.77	3 55	2 88	3 34	3 29	3.49	3.30		2	Sept
3.04	2.95			2.89	3.95	3.42	3.34		3	
3.40	4.16	3.27	2.75	2 94	3.14	3 56	3.37		6	
3.31	2.74	2 68	3 04		3.35	3.23	3 34		8	
3.69	3.48	3.29	3 17	3 43	3.21	3.37	3.55		9	
	3.18	2.91		3.14	2.94	3.43	3.56		12	
	3.94	3.08	3.06	3.17	3.21	3 45	3 71		16	
									17	
									19	
									20	
									21	
									23	
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									1	Oct.
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									3	Nov.
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									4	Dec.
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									26	
									27	

16																	3.36	3.07	2.31	2.65	2.91	3.37	2.64		3.61	3.16		2.17												
20																																								
24																																								
25																			3.41	2.92	2.69	3.47	2.84	2.66	3.23	2.91	3.07	2.42	2.50	2.68										
26																			2.96	1.95	3.51	3.39	3.79	2.61	2.85		3.50	3.05	3.27	3.03										
1 Mar.																					2.71	3.35	2.35	2.42	2.86	3.22	3.45	2.31	2.80	3.19										
6																																								
7																						3.20	3.25	2.62	2.41															
13																						3.75	3.23	3.85	2.81	2.98	3.70													
16																																								
17																								2.87	2.64	3.06	2.99	3.64	3.19	3.41	2.73	3.45	3.15							
18	2.82	2.75	2.26	2.96																				3.11	3.16	3.32	3.38	2.98	2.93		3.10	3.00	3.35							
21																																								
27	2.70	2.77	2.83	3.02																								3.04	2.87	2.80	2.54	3.69	2.68	2.51						
28	.95	3.01	2.27	2.47																								2.89	3.05	2.68	3.19	2.58								
29	3.13	3.01	3.05	2.69																								3.17	2.18		3.18	3.43	3.45	3.08	2.77					
2 Apr.	.71	2.96	3.11	3.18																																				
4																													2.54	2.77	3.35	3.04	2.66	2.53	2.04	2.55	2.07			
16	.41	3.06	3.35	2.85		2.75																																		
17																													2.89	3.11	2.86	3.46	3.35	3.21	3.04	3.10	3.09	2.98	3.04	
18																													2.44	3.33	3.10	3.24	2.99	3.60	2.72	2.73	2.82	3.89		
23																																		3.47	3.05	3.15	2.96	2.99	2.78	
24	.19	2.46	2.56	2.85	2.91	2.92	2.81	3.04	2.88	3.09	2.99	2.58	2.58	2.61	3.06																									
25	3.24																																	2.48	2.28	2.99	2.39	2.66	3.02	2.87
28	.82	2.75	2.76	2.80	2.51	2.69		2.89	3.52	3.56	2.74	2.71	2.96	3.18	2.58																									
6 May	.95	2.91	2.44	2.45	3.20	3.08	3.70	3.10	2.82	2.95	3.25	2.60	2.87	2.82	3.20																			3.18	2.75	2.92	3.08	2.36	2.79	2.34
7	.07	2.71	2.82	3.50	2.76	2.91	2.82	2.64	3.19	3.95	2.90	3.28	3.13	3.40	3.01																			3.17	3.38	4.04	2.86	3.18	2.69	3.14
8					2.77	2.83	2.81	3.13	3.19	2.58	3.03	3.21	2.72	2.73	2.91	3.15	3.21	2.65		2.29																				
9						2.75	3.17	2.79	3.13	3.12	2.61	2.89	2.73	2.87	3.12		3.02	3.10	2.97	2.74	3.15	3.04																		
10					3.25	3.31	3.04	3.30	3.04	2.77	3.04	3.39	3.38	2.97	2.70	3.30	3.26	3.52	3.26	2.81	3.35	2.74																		
11																																		4.12	2.94	3.09	2.72	3.63	3.13	2.66
12					3.00	2.77	2.50	2.83	3.10	3.13	2.65	3.24	2.85	2.79	2.81	3.05	3.21	3.47	3.79																					
19						2.98	3.01		3.74	3.09	3.20	3.38	2.24	3.08	3.46	2.76	2.93	2.94	3.01	3.61	3.22	3.57												3.55		2.69	2.44	3.16	3.45	2.50
31										3.55	3.31		2.83	3.46	3.04	2.92	3.23	3.29	3.12	3.35	2.88	3.87																		
7 June												3.32	3.31	3.63	3.31	2.60	2.90	3.04	3.08	3.14	3.17	3.24																3.36	2.98	3.49
8																3.32	2.93	3.12	2.82	2.89	2.77	3.36	2.91	3.08	2.84	2.88	3.32	2.74	3.55	2.99	3.38	3.13						3.23	3.16	
9																3.20	2.97	2.80	2.91	2.62	3.05	2.95	3.25	3.40	3.22	3.04	3.20	3.58	2.41	3.32	3.59	2.27						3.11	3.45	3.54
11																2.86	3.16	2.93	2.83	3.23	2.79	3.14	2.74	3.30	2.89	3.22	2.87	3.11										3.25	2.94	
13																3.16	3.01	2.97	3.28	3.19	3.61	3.07	2.65	3.33	3.06	3.25	2.65	3.11	2.76	3.18	3.10	3.02								
14																																								
17																																								
20																		2.94		3.28	3.00	3.77	3.15	3.01	3.34	2.43	3.56	3.04	3.28	3.24	2.86	3.33								
23																		3.12	3.26	3.20	3.11	3.35	3.11	3.25	3.05	2.85	3.18	3.07	3.17	3.34	3.26	3.27								
24																		3.12	3.69	2.95	2.34	3.46	3.14		3.51	3.42	3.05	3.30	3.10	3.11	2.81	2.88								
28																																								
30																																								
2 July																							2.69	2.72	3.13	3.32	3.18	3.13	3.14	2.71	3.02	2.97	3.32	3.23	3.62	3.56	3.37	3.19	3.16	3.19
5																																								
7																							3.06	2.93	3.33	3.65	2.21	2.85	3.38	3.21	2.86									
9																							3.33	3.40	3.14	3.46	3.73	3.45	3.38	3.46	3.70	3.07	3.29	2.68	3.89	3.35	3.12	3.19	2.98	2.56
10																							3.28	3.25	3.66	2.95	3.50	2.84	3.51	2.90	2.87	2.91	3.09	3.64	3.45	3.44	3.41	2.96	2.76	3.23
11																							3.14	2.67	3.30	3.22	2.88	2.90	2.89	3.12	2.98	2.82	2.95	2.90						
16																							3.22	3.13	2.99	3.19	3.09	3.83	3.28	3.22	3.73									
17																															3.02	4.22	3.13	2.90	2.96	3.16	3.38	3.64	3.22	2.99
18																							3.60	3.05	3.34	3.64	2.76	2.72	2.99	2.99	2.69									
19																															3.24	3.51	2.58	3.05	3.20	2.69	3.19	3.02	3.03	3.00
20																									3.47	3.48	3.10	3.12	3.18		3.12	3.22	3.14	3.15	3.41	3.42	3.12	3.24	2.93	3.35
23																																								
27																																	2.89	2.91	3.22	2.85	2.98	2.94	2.86	2.86
29																																	2.67	2.97	2.92	3.25	3.32	3.30	3.24	2.92
30																																	3.30	3.22	3.53	3.54	3.04	3.24	3.16	2.98
2 Aug.																																								
5																																	3.08	3.09	2.97	3.17	3.21	3.27	3.02	3.43
6																																								
7																																	2.99	3.15						
8																																	3.54	3.24	2.83	3.06	3.33	3.03	3.51	3.24
9																																	3.04	2.95	2.98	3.24	3.18	2.93	3.06	3.42

7	8	9	10	VIII 1	2	3	4	5	6	7	8	9	10	11	IX 1	2	3	4	5	6	7	X 1	2	3	4	5	6	7	8	9	10	XI 1	2	3	4	5	6	7	8	1892	
//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//		
																																								10	Oct.
																																								11	
																																								14	
																																								16	
																																								19	
																																								21	
																																								23	
																																								24	
																																								30	
																																								5	Nov.
																																								8	
																																								11	
3.49																																								13	
																																								16	
3.16	1.98		2.40																																					17	
3.03	3.34	3.13	3.21	2.66	2.26																																			20	
																																								22	
																																								26	
																																								1	Dec.
																																								2	
3.36	3 33	3.83	3.69	3.45	3.67																																			3	
3.56	3.37		3.73																																					5	
3.21	2.17	3.26	3.23	3.10	3.43	2.84	3.52	3 43	3.33																															9	
3.35																																								10	
3.42	3.00	3.06	2.35	2.53	2.94	2 63	2.47	2.99	3.35	2.63	3.51	3 08																												11	
	2.59	2.83	2.72	3.71	2.71	3.03	3.12	2.69	3.05	3.06	2.87																													12	
		3.10	2.67																																					15	
																																								17	
																																								18	
																																								20	
																																								22	
																																								23	
				3 05	3.24		3.17	2.63		3.16		3.71	3.42	2.96																											25	
				3.49	3.12	3.08	3.00	3.08	2.33	3.31	2.85	2 99	3.32	3.16	3.14																										26	
						2.53	3 20	3.40	2.74	2.87		3.23	2.54	2.80	2.99																										27	
																																								28	
																																								1893	
						3 14	2 53	3.17	3.03	3.02	2.71	2.98	3.26	3.38	2.28																									3	Jan.
							3.05		3.12	2.83	3.40			2.73																										7	
																																								13	
																																								16	
									2.88	3.07	2.90		2.69	3.38	3.69	2.98	2.83	2.95	2.75	3.02																			17	
												3.12	3.07	3.13	2.34	2 48	2.90		2 62	2.48																			19	
																																								20	
																																								21	
																																								23	
																																								25	
																																								26	
															2.98	3.15	2.77	3.58	3.04	3 20	1.78	2.92	2.94	2.89																3	Feb.
															3.83	3.11	3.22	2.89	3.36	3.17	2.76	3.30		3.04	3.44															4	
																																								8	
															2.99	3.33	2.85	3.19	3.47	2.83	3.29	3.22	3.00	2.89	3.63	2.76														11	
																																								14	
															3.02	3.08	3.63	3.15	2.63			2.83	2.98	3.72	3.32	3.19	2.83												15	
																3.36	3.07	2.31	2.65	2.91	3.37	2.64		3.61	3.16		2.17												16	
																																								20	
																		3 41	2.92	2.69	3 47	2 84	2.66	3.23	2.91	3.07	2.42	2.50	2.68									24	
																		2.96	1.95	3.51	3.39	3.79	2.61	2.85		3.50	3.05	3.27	3 03									25	
																				2.71	3.35	2.35	2.42	2 86	3.22	3 45	2.31	2 80	3.19									26	
																					3.20	3.25	2.62	2.41														1	Mar.
																					3.75	3.23	3 85	2 81	2 98	3.70												6	
																							2.87	2.64	3.06	2.99	3.64	3.19	3.41	2.73	3.45	3.15								7	
																																								13	
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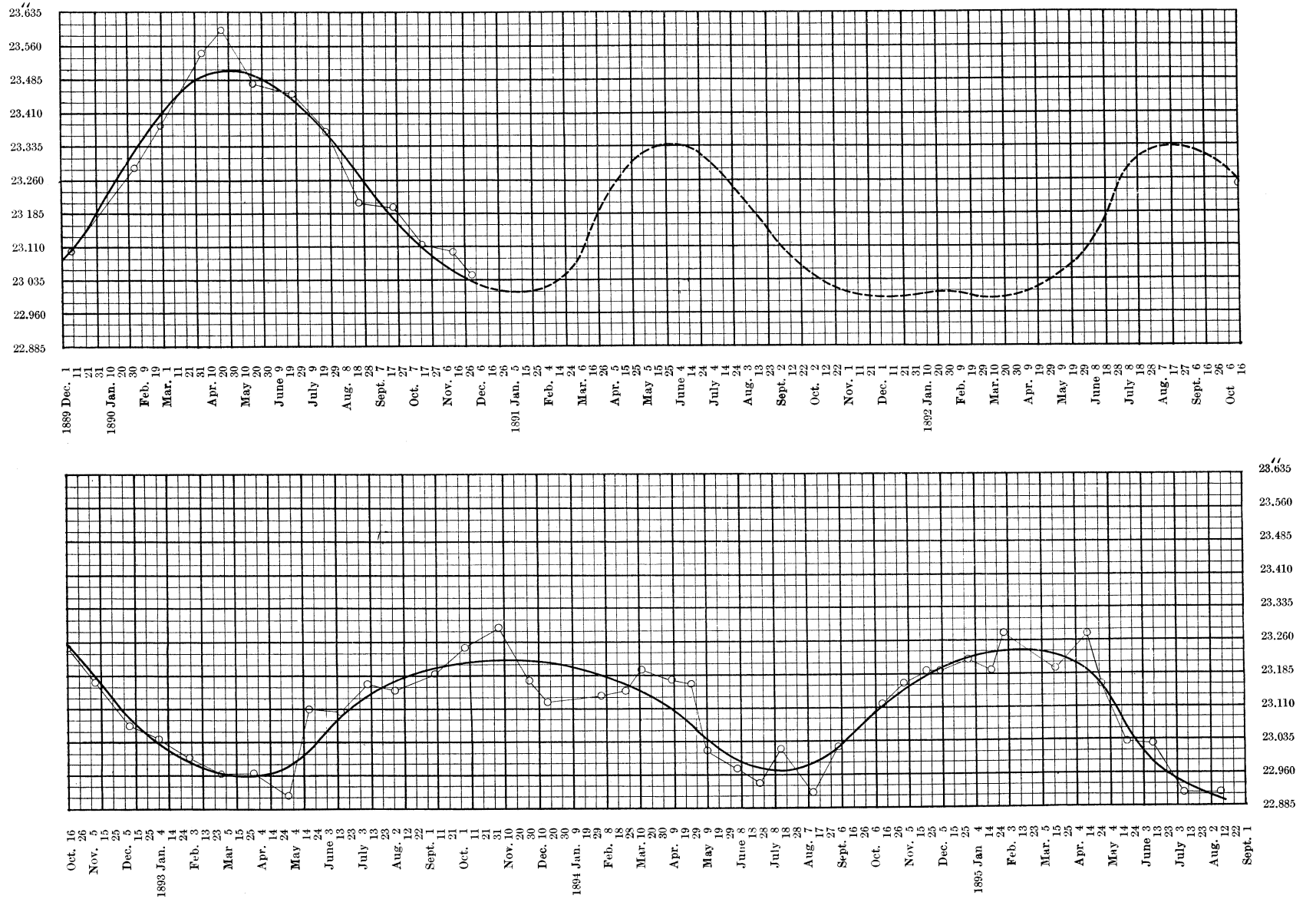
Diagram Showing the Variations of Latitude at the Sayre Observatory, South Bethlehem, from December 11, 1889, to August 12, 1895.



That part of the curve shown by the dotted line is taken from Th. Albrecht's paper entitled "Bericht über den Stand der Erforschung der Breitenvariation im December, 1897." Berlin, 1898.